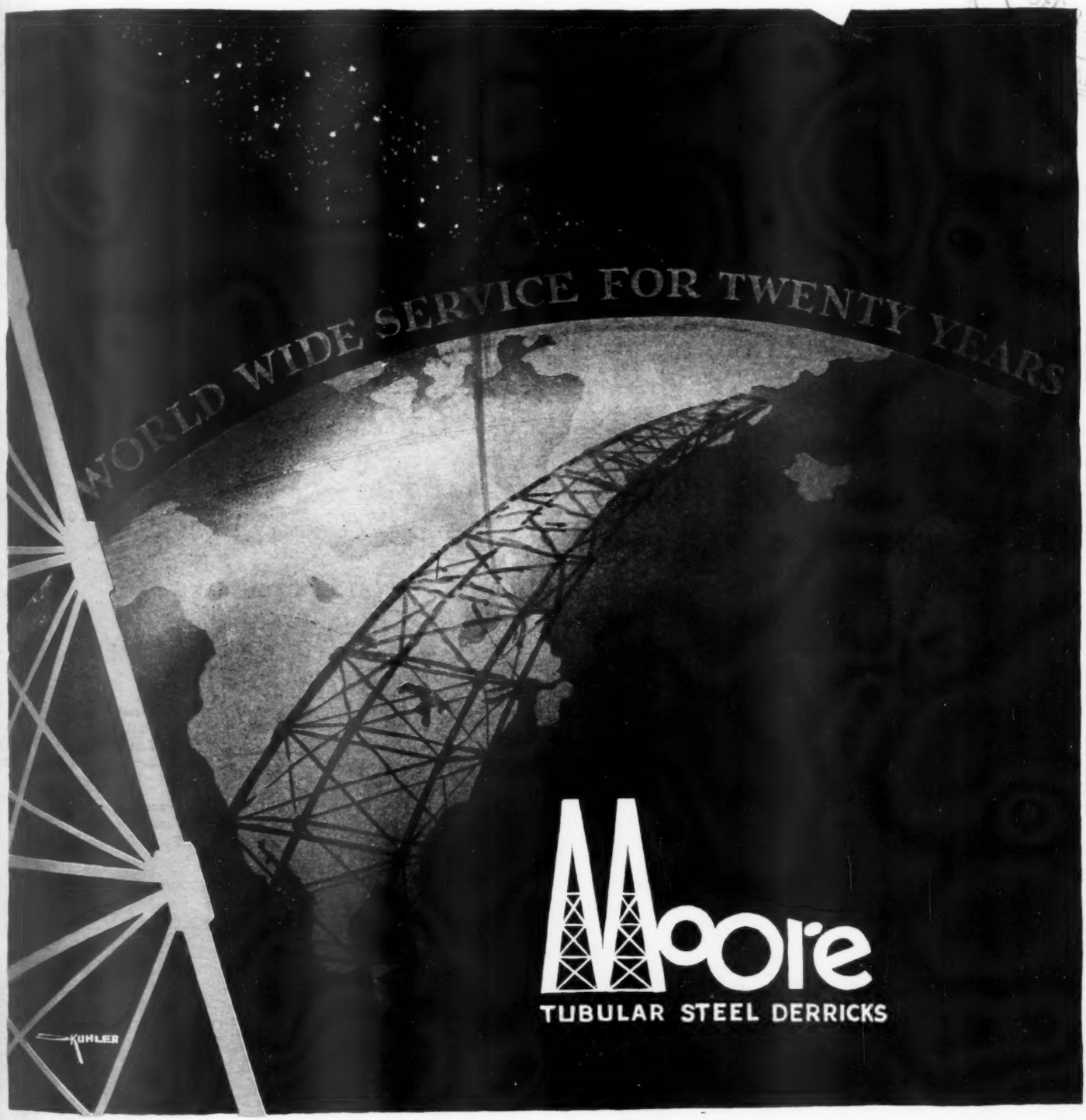
Complete World's Survey of the Oil Industry
15 Cents a Copy

The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

Published Every Thursday TULSA, OKLAHOMA, DECEMBER 29, 1927 $6.00 a Year

THE JOHN CRE
DEC 1927



Advertisers' Index on Page 41 Table of Contents on Page 42

Big!

Big in performance—big in reserve strength—big in true economy, CHAPMAN VALVES of Chrome Nickel Steel are the standard choice of refinery engineers who build for sound profit.

Stronger than forged steel, Chapman Chrome Nickel Steel is the ultimate development of years of experiment. It has proven superior to the most extreme temperatures and pressures in service.

CHAPMAN Refinery Valves, Drilling Valves, Pipe Line Valves are stocked close to you for immediate shipment.

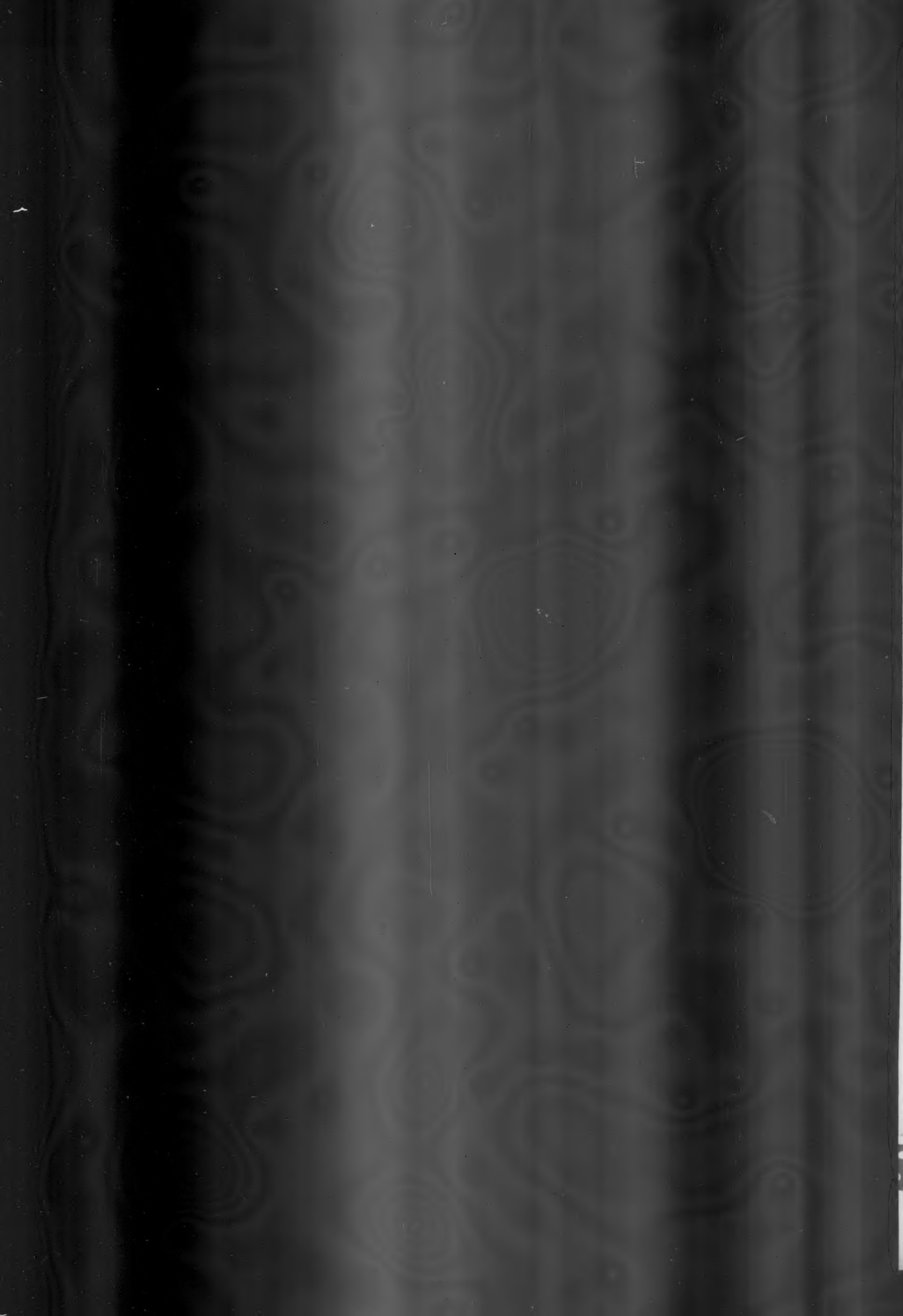
The Chapman
Valve Manufacturing Co.
Indian Orchard, Mass.

Branch Offices:

New York	Detroit	Pittsburgh
Boston	Houston	Philadelphia
Chicago	Atlanta	San Francisco
Cleveland	Tulsa	Los Angeles
	Syracuse	

Distributors:
E. L. Wilson Hardware Co.
Beaumont and Houston
Wagner Supply Co., Fort Worth

Chapman Valves



The ADVERTISERS' INDEX

A

Abercrombie, J. S., Co. 263
Acme Fishing Tool Co. ....
Ajax Iron Works 185
Ajax Rope Co. 284
Alfit Packing Co., Inc. 220
Allegheny Steel Co. ....
Allis-Chalmers Mfg. Co. 87
Aluminum Co. of America ....
Amarillo Abstract Co. 286
American Asphalt Paint Co. 222
American Cable Co., Inc. ....
American Car & Foundry Co. ....
American Hammered Piston Ring Co. 30
American Iron & Machine Works, Inc. ..189
American-La France & Foamite Corp. ..
American Manganese Steel Co. 15
American Radiator Co. ....
American Roller Bearing Co. 177
American Rolling Mill Co. ....
American Schaeffer & Budenberg Corp. ..
American Sheet & Tin Plate Co. ....
American Spiral Pipe Works ....
American Telephone & Telegraph Co. ..
American Well Works ....
Andrews Steel Co. 281
Arco Company, The 259
Armstrong Bros. Tool Co. 273
Association of Natural Gasoline Mfgrs. ..
Athey Truss Wheel Co. 19
Austin Co. 31
Axelson Machine Co. 97

B

B. & A. Specialty Co. ....
Baash-Ross Tool Co. ....
Babcock & Wilcox Tube Co., The ....
Badger, E. B., & Sons, Co. 112
Baker Casing Shoe Co. 23
Baker-Lockwood Mfg. Co. 224
Baldwin Chain & Mfg. Co. 13
Barber Asphalt Co. ....
Barber-Greene Co. ....
Barco Manufacturing Co. 5
Barnickel, Wm. S., & Co. 285
Barnsdall Refineries, Inc. ....
Barrett, G. E. & Co. ....
Bartlesville Supply Co. 257
Beaumont Iron Works Co. 181
Becker Specialty Co. ....
Benjamin Electric Mfg. Co. ....
Bessemer Gas Engine Co. 2
Bethlehem Steel Co. 38
Biggs Boiler Works Co. ....
Bignall & Keeler Machine Works 264
Blaw-Knox Co. ....
Bovaird Supply Co., The 110-111
Braden Steel & Winch Co. ....
Braun, C. F., & Co. 201
Bristol Co. ....
Broderick & Bascom Rope Co. 16
Brooks Engineering Corp. ....
Brown, Arthur C. 286
Brown Instrument Co. 68
Brownell Co. 285
Buckeye Traction Ditcher Co. ....
Buda Co. ....
Buffalo Bolt Co. ....
Buffalo Gasolene Motor Co. 204
Burns Tool Co. 66
Burt Corp. ....
Burt Mfg. Co. 272
Butler Mfg. Co. 21
Byers, A. M., Co. ....
Byron Jackson Pump Mfg. Co. 28

C

California Pipe Line Machine Co. ....
Cameron Iron Works 186
Cameron Tool & Supply Co., The 278
Campbell, J. A. 275
Canadian Pacific Railway Co. ....
Carbondale Machine Co. ....
Caterpillar Tractor Co. 159
Celite Products Co. 249
Central Alloy Steel Corp. ....
Central Tube Co. 282
Chain Belt Co. ....
Champion Machine & Forging Co. ....
Chaplin-Fulton Mfg. Co. 283
Chapman Valve Mfg. Co. Inside Front Cover
Chestnut & Smith Corp. 99-100-101-102
Chicago Bridge & Iron Works 35
Chicago Pneumatic Tool Co. ....
Chisholm-Moore Mfg. Co. ....
Clark Bros. Co. 109
Classified Wants 226-227
Climax Engineering Co. 154
Close-to-Nature Co. 216
Columbian Rope Co. 223
Columbus Forge & Iron Co. ....
Compania Cartografica Venezolana 225
Continental Motors Corp. ....
Continental Supply Co. 40-208
Cook Motor Co., The ....
Cooke Seal Ring 135
Cooper, C. & G., Co. 93
Crane Co. ....
Crane Packing Co. ....
Crescent Belt Fastener Co. ....
Crown Central Petroleum Corp. ....

D

D. & B. Pump & Supply Co. ....
Darling Valve & Mfg. Co. ....
Dart, E. M. Mfg. Co. ....
Davis, G. M., Regulator Co. 254
Dayton Pipe Coupling Co. ....
Dearborn Chemical Co. 220
De La Vergne Machine Co. ....
Delta Electric Co. 284
Detex Watchclock Corp. ....
Detroit Graphite Co. ....
Diamond Drill Carbon Co. 286
Dixon, Joseph, Crucible Co. ....
Donovan Boiler Works, Inc. 258
Dresser, S. R., Mfg. Co. 53
Dunn Mfg. Co. 57
Du Pont de Nemours & Co., E. I., Inc. ..

E

Eagle-Picher Lead Co. ....
Eastern Torpedo Co. ....
Edward Valve & Mfg. Co. ....
Elliott Core Drilling Co. 276
Empire Oil & Refining Co. ....
Emsco Derrick & Equipment Co. ....
Ethyl Gasoline Corp. ....
Exchange National Bank ....

F

Fairbanks-Morse & Co. 210-211
Federal Supply Co. ....
Fenwick-Reddaway Mfg. Co. ....
Fernholtz Machinery Co. ....
Fisher Governor Co. 61-63-65
Fluor Construction Co. ....
Fohs, F. Julius ....
Foos Engine Co. ....
Ford Chain Block Co. 272
Foster Wheeler Corp. 32
Foxboro Co., Inc., The 79
Franklin Valveless Engine Co. 138-139
Frick-Reid Supply Co. 153

G

Gardner-Denver Co. 4
Garlock Packing Co. ....
Gasoline Recovery Corp. ....
Gaso Pump & Burner Mfg. Co. ....
....105-106-107-Inside Back Cover
General American Tank Car Corp. ....
General Asbestos & Rubber Co. ....
General Electric Co. ....
Gilbert & Barker Mfg. Co. ....
Goodrich, B. F., Rubber Co. ....
Goodyear Tire & Rubber Co. ....
Gott, H. P., Mfg. Co. 282
Goulds Pumps, Inc. ....
Graham Brothers ....
Graver Corp. ....
Gray Processes Corp. ....
Greenspon's, Joseph, Sons, Iron & Steel Co. 280
Griscom-Russell Co. 251
Gulf Refining Co. 84-85
Gulf Refining Co. 271

H

Halliburton, Erle P., Co. ....
Halliburton Oil Well Cementing Co. 29
Harrisburg Pipe & Pipe Bending Co. ....
Haynes Stellite Co. ....
Hazard Wire Rope Co. ....
Heppenstall Forge & Knife Co. 270
Hercules Motors Corp. ....
Hercules Supply Co. ....
Hercules Tool Co. ....
Heydrick Mapping Co. 286
Hill, Hubbell & Co. ....
Hills-McCanna Co. 6
Hinderliter Tool Co. ....
Homestead Valve Mfg. Co. ....
Hope Engineering & Supply Co. 12
Hopkins, Edwin B. 286
Hough, Charles N., Mfg. Co. 187
Hoyt Metal Co. ....
Hughes Tool Co. ....Back Cover
Humble Oil & Refining Co. ....
Hunt, Robert W., Co. ....

I

Imperial Belting Co. 270
Imperial Royalties Co. ....
Indiana Truck Corp. ....
Ingersoll-Rand Co. 9
International Derrick & Equipment Co. 132-133
International Harvester Co. of America. ....
International Nickel Co. 11
International Supply Co. ....

J

Jackson Engineering & Equipment Co. ..
Jarecki Mfg. Co. ....
Jefferson Union Co. 142
Jensen Brothers Mfg. Co. 188
Johns-Manville Corp. ....
Jones, S. M., Co. 20

K

Kaw Steel Construction Co. ....
Kellogg, M. W., Co. 14
Kelly, John Eoghan ....
Kelly, Kork 286
Kennedy Valve Mfg. Co. ....
Kerotest Mfg. Co. 33
Keuffel & Esser Co. ....

L

Landis Machine Co. 3
Larkin & Co. ....
Layne & Bowler Co. 150-151
Leader Iron Works ....
Leidecker Tool Co. ....
Leschen, A., & Sons, Rope Co. 25
Lientz, B. P., & Co. ....
Lincoln Electric Co. ....
Linde Air Products Co. 1
Link-Belt Co. 214-215
Longyear, E. J., Co. 274
Lorraine Corp., The ....
Lubrikup Co., Inc. 285
Lucey Mfg. Corp. ....
Ludlow Valve Mfg. Co. 39
Lufkin Fdy. & Machine Co. 156-157
Lufkin Rule Co. ....
Lunkenheimer Co. ....

Mc

McCord Radiator & Mfg. Co. 200
McEvoy, J. H., & Co. ....
McGregor Working Barrel Co. 283
McIntosh & Seymour Corp. ....
McKee, Arthur G., & Co. ....

M

M. & M. Mfg. Co., The 182
Macwhyte Co. 268
Madison-Kipp Corp. ....
Magnolia Petroleum Co. ....
Maloney Tank Mfg. Co. 212
Manzel Brothers Co. 225
Marion Machine Fdy. & Supply Co. 190-191
Marsh Gauge Pole Co. 284
Mason Regulator Co. 277
Master Builders Co. ....
Mathieson Alkali Works, Inc. ....
Merco Nordstrom Valve Co. 36
Metric Metal Works 147
Midwest Piping & Supply Co. 37
Miller Improved Gas Engine Co. 22
Mission Sales Co. 34
Moon Mfg. Co. 282
Moore, Lee C., & Co., Inc. ....Front Cover
Moore Drop Forging Co. ....
Munn & Co. 286
Myers, F. E., & Bro., Co. 285

N

National Carbon Co., Inc. 1
National Petroleum Engineering Co. 286
National Pigments & Chemical Co. 262
National Supply Co. 144-145
National Transit Pump & Machine Co. .. 59
National Tube Co. ....
Neilan, Shumacher & Co. 209
Newton Process Mfg. Co. 51
New York Rubber Corp. ....
Norris Brothers, Inc. 260
Norris, W. C. ....
North American Car Corp. 285
Northern Pump Co. ....
Novo Engine Co. ....
Nuttall, R. D., Co. 7
Nye Tool & Machine Works ....

O

Oakite Products, Inc. ....
O'Brien Steel Construction Co. 268
Ohio Injector Co., The ....
Oil City Iron Works, Inc. ....
Oil Conservation Engineering Co. ....
Oil Country Specialties Mfg. Co. 207
Oil Insurance Association ....
Oil Well Improvements Co., The 192
Oil Well Supply Co. 83
Oklahoma Gas & Electric Co. ....
Oklahoma Iron Works 213
Oklahoma Portland Cement Co. 216
Oxweld Acetylene Co. 1

P

Page, H. W., Inc. ....
Page Steel & Wire Co. ....
Paige & Jones Chemical Co., Inc. ....
Parkersburg Machine Co. ....
Parkersburg Rig & Reel Co. 81
Patrick, R. S. 279
Pattin Brothers Co. ....
Pelican Well Tool & Supply Co. 70
Penberthy Injector Co. 279
Petroleum Appliance Co. ....
Petroleum Iron Works Co. 269
Pforzheimer, Carl H., & Co. 281
Philadelphia Gear Works ....
Phillips Petroleum Co. ....
Pittsburgh-Des Moines Steel Co. ....
Pittsburgh Equitable Meter Co. 137
Pittsburgh Pipe Coil & Bending Co. ....
Pittsburgh Steel Products Co. ....
Pomona, Manufacturing Co. ....
Powell, William, Co. 273
Power Mfg. Co., The 286
Power Piping Co. 280
Power Plant Equipment Co. ....
Prescott Co., The 178-179
Prest-O-Lite Co., Inc., The 1
Pure Oil Co. 267
Pyle National Co. ....

Q

Quaker City Rubber Co. 283

R

Ratigan, J. P., Co. ....
Reading Iron Co. ....
Reading Steel Castings Co., Inc. ....
Reed Roller Bit Co. ....
Regan Forge & Engineering Co. 141
Reid, Joseph, Gas Engine Co. 27
Reo Motor Car Co. ....
Republic Iron & Steel Co. 265
Republic Supply Co. 219
Ridge Tool Co. ....
Riehle Bros. Testing Machine Co. ....
Riter-Conley Co. 285
Robinson Orifice Fitting Co. ....
Rock Island Plow Co. ....
Roots, P. H. & F. M., Co. ....
Ross-Meehan Foundries ....
Ryerson, Joseph T., & Sons, Inc. 284

S

Safety Gas Main Stopper Co. 285
Safety Pulling Machine Co. ....
Shaffer, J. E., Co. ....
Shaffer Specialty Co., The 75
Shaffer Tool Works ....
Shaw, S. F. ....
Sheffield Steel Corp. ....
Sinclair Refining Co. 239
Sivyer Steel Casting Co. ....
Skelly Oil Co. ....
Skinner, M. B.: Co. 283
Smit, Anton, & Co. ....
Smith, A. O., Corp. 17-88
Smith Separator Co. 90-91
Smooth-On Mfg. Co. 266
Sonner, P. J., Gas Burner Co. ....
South Chester Tube Co. ....
Southern Cornice Works ....
Southwestern Engineering Corp. 148
Spang & Co. 256
Spang, Chalfant & Co., Inc. 10
Standard Rail & Steel Co. ....
Standard Seamless Tube Co. ....
Stanley Belting Corp. ....
Star Drilling Machine Co. ....
Staytite Co., The ....
Stearns-Roger Mfg. Co. ....
Strom Steel Ball Co. ....
Sullivan Co., The ....
Sullivan Machinery Co. 203
Sweet, Wm. J., Foundry Co. ....

T

Taubman Supply Corp. ....
Taylor Instrument Companies ....
Templeton, Kenley & Co., Ltd. ....
Texas Company, The 261
Texas Creosoting Co. ....
Texas Pacific Coal & Oil Co. ....
Texas & Pacific Railway Co., The 213
Texas Steel Co. ....
Timken Roller Bearing Co. 26
Titusville Iron Works 24
Toledo Pipe Threading Machine Co. 183
Traction Machine Co., The ....
Trimont Mfg. Co. ....
Trumble Gas Trap Co. ....
Tulsa Pipe & Supply Co. of Texas ....
Tulsa Sheet Metal Co. ....
Twin Disc Clutch Co. ....

U

United Air Cleaner Co. ....
United Iron Works, Inc. 253
United States Cast Iron Pipe & Fdy. Co. ..
United States Industrial Diamond Corp. ..286
Universal Oil Products Co. 76-77

V

Victaulic Co. of America 8
Victor Balata & Textile Belting Co. 278
Vogt, Henry, Machine Co. ....

W

Wagner Electric Corp. ....
Wailes Dove-Hermiston Corp. 286
Walsh & Weidner Boiler Co. ....
Walworth Co. ....
Warren Petroleum Co. ....
Washburne, Chester W. 286
Waukesha Motor Co. 131
Westcott & Greis ....
Westinghouse Electric & Mfg. Co. 18
West Texas Utilities Co. ....
Whealton & Townsend, Inc. ....
Wheeling Steel Corp. ....
Wickwire Spencer Steel Co. ....
Wico Electric Co. ....
Widdell Engineering Co. ....
Williams, J. H., & Co. ....
Williamsport Wire Rope Co. ....
Williams Tool Corp. ....
Wilson Oil Tools Corp. ....
Wilson-Snyder Mfg. Co. ....
Witte Engine Works ....
W-K-M Company, Inc. ....
Worthington Pump & Machinery Corp. .. 72
Wright Mfg. Co. ....

Y

Yale & Towne Mfg. Co. ....
Young Engine Corp. ....

Z

Zero Hour Torpedo Co. 255
Zwetsch Heinzelmann & Co. 286

The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

VOL. 26. NO. 32 TULSA, OKLAHOMA, DECEMBER 29, 1927

Copyright, 1927, by The Petroleum Publishing Co.

TABLE OF CONTENTS

SPECIAL ARTICLES

Better Feeling Regarding Situation ... 43
By Andrew M. Rowley
Improvement seen in Oklahoma and Kansas but West Texas, California and Venezuela will wield big influence.

Studying Corroding Action of Soils ... 45
By H. D. Holler

Oil Industry Holds Commanding Place ... 46
By Thomas F. Smiley
Automotive manufacture built largely upon petroleum's utilization.

Judge Beaty Leaves The Texas Corporation ... 46

New Petroleum Developments Abroad ... 47

Reason for Buying Oil From Soviet ... 48
By N. O. Fanning

Venezuela's Remarkable Development ... 49
By Edwin B. Hopkins and H. J. Wasson
Challenging Mexico as third oil producing country.

Greater Difficulty in Mexican Fields ... 50
Cost of operation increased by additional drilling and exploration.

A Suggestion to the Industry (Editorial) ... 52

Little River Wells Run Together ... 78
By J. L. Dwyer
Drills collide at shallow depth. Holes abandoned.

Field Problems and Their Solution ... 80
Edited by Thomas F. Smiley

World Oil Outlook ... 98

Increased European Oil Consumption ... 103

Study Alternative Motor Fuels Abroad ... 104

World Production 1857-1927 ... 104

Trend to Legislative Control of Oil ... 108
Nationalization of production and movement for monopoly in distribution.

Venezuela to Show Increased Activity ... 113
By Charles E. Kern

Venezuela Second in Monthly Output ... 130

Russians Likely to Exceed Record ... 134

Rumanian Industry in Crisis ... 136

Chemical Coal and Oil Combinations ... 140

American Operations in Foreign Fields ... 143

Airplane Production Growing Fast ... 143

France Counting on Oil From Irak ... 146

Foreign Gasoline Demand and Prices ... 149

Auto Registration in Foreign Lands ... 152

Close-Up of Persian Oil Industry ... 155

Exports Show Seven Per Cent Gain ... 158

Foreign Oil for Foreign Markets ... 160

More Trinidad Crude Imported ... 160

Testing Reduction of Breathing Loss ... 194
By Ludwig Schmidt
Relative value of operating under pressure, paints and housing.

Dewatering of Gas Wells ... 257
By Morgan Walker

Golden Lanes of Greenwood County ... 241
By W. K. Cadman

Motor Transport in the Oil Industry ... 244
By J. F. Winchester

Story of First Gas Well ... 263

Future Value of Pipe Lines ... 266
By N. O. Fanning

Oil Taxation in Venezuela ... 274

Notes on Russian Oil Industry ... 283

FIELD OPERATIONS

West Texas, *By C. D. Lockwood* ... 54

Texas Panhandle and North Texas, *By J. H. Dameron* ... 56

Oklahoma, *By J. L. Dwyer* ... 58

Eastern Fields, *By D. S. Wakenight* ... 58

Kansas, *By J. L. Dwyer* ... 60

Southwest Texas, *By B. D. Stevenson* ... 62

North Louisiana-Arkansas, *By D. H. Bancroft* ... 64

Gulf Coast, *By Neil Williams* ... 67

Rocky Mountain Area, *By Tolbert R. Ingram* ... 69

Canada, *By Victor Lauriston* ... 69

California, *By L. P. Stockman* ... 71

Central West, *By Whit* ... 74

Kentucky-Tennessee, *By Whit* ... 78

Late Fields ... 246

REFINING AND MARKETING

Chicago Market Waits Developments ... 228
By J. B. Waldo

More Optimistic in Eastern Market ... 229
By N. O. Fanning

Mid-Continent as Refining Center ... 230
By C. O. Willson
Holding its own in production of refined products although plants fewer.

Refining and Marketing News ... 234

Plant Operators' Page ... 235

Refinery and Crude Prices ... 236-237

Tank Wagon Quotations ... 238

Technical Questions Answered ... 248
By Dr. C. K. Francis

Lead Sulphide Treating in Refining ... 250
By G. L. Rosey and J. F. Whitehurst
Introduction of air in closed system essential phase of new method.

Of Interest to Sales Departments ... 252

Short Talks on Specifications ... 252
By W. T. Ziegenhain

Vapor Phase Cracking Important ... 277
By Luis de Flores

ARTICLES OF GENERAL INTEREST

The Advertisers' Index ... 41

Men Known in Oildom and Personals ... 82

Equipment and Supplies ... 86-92-206

Natural Gas Developments ... 89

Expect Gain Steel Output ... 202
By B. E. V. Luty

Classified Want Advertisements ... 226-227

Oil Securities Market ... 240

Crude Petroleum Statistics ... 288

BE A REGULAR READER

The OIL and GAS JOURNAL Tulsa, Okla.

You are hereby directed to mail The Oil and Gas Journal to me for.....year. Enclosed find remittance $.....

Classify my interests as checked by me.

.....Producing .....Refining
.....Equipment .....Marketing

Name.....
Address.....
City.....

$6 a Year
$3 6 Months

Refinery Section Starts on Page 228

Better Feeling Regarding Situation

Highest daily average estimated production in 1926, week ended Dec. 25, 2,385,139 bbls. Lowest in 1926, January 30, 1,915,960 bbls.

Improvement Seen in Oklahoma and Kansas, but West Texas, California, Venezuela Will Wield Big Influence

By Andrew M. Rowley

Highest daily average estimated light oil production in 1926, week ended Dec. 25, 1,797,349 bbls. Lowest in 1926, Jan. 30, 1,371,600 bbls.

While by no stretch of imagination can it be said oil men are bubbling over with optimism regarding the outlook, there is a distinctly better feeling gaining in extent based on the belief the plan to curtail drilling in the greater Seminole area in Oklahoma until March 1 will be adhered to strictly; that by that time production in that section will have decreased materially; and that it is entirely probable companies in Oklahoma and Kansas at least will be withdrawing crude oil from storage by early February.

On the other hand it is estimated pipe line and loading rack facilities in West Texas by July 1 will care for 480,000 barrels daily. In this connection, however, more oil men who have studied the situation closely are holding the opinion if the Yates Pool in Pecos County is opened up and permitted to produce to capacity, the life of the field will be of comparatively short duration.

The decrease in production in California last week will not continue and the output there may be expected to show steady increases from this time until next summer. In addition, it is almost a certainty South American fields, especially those in Venezuela, will wield a far greater influence upon the general situation in this country during next year than at any previous time.

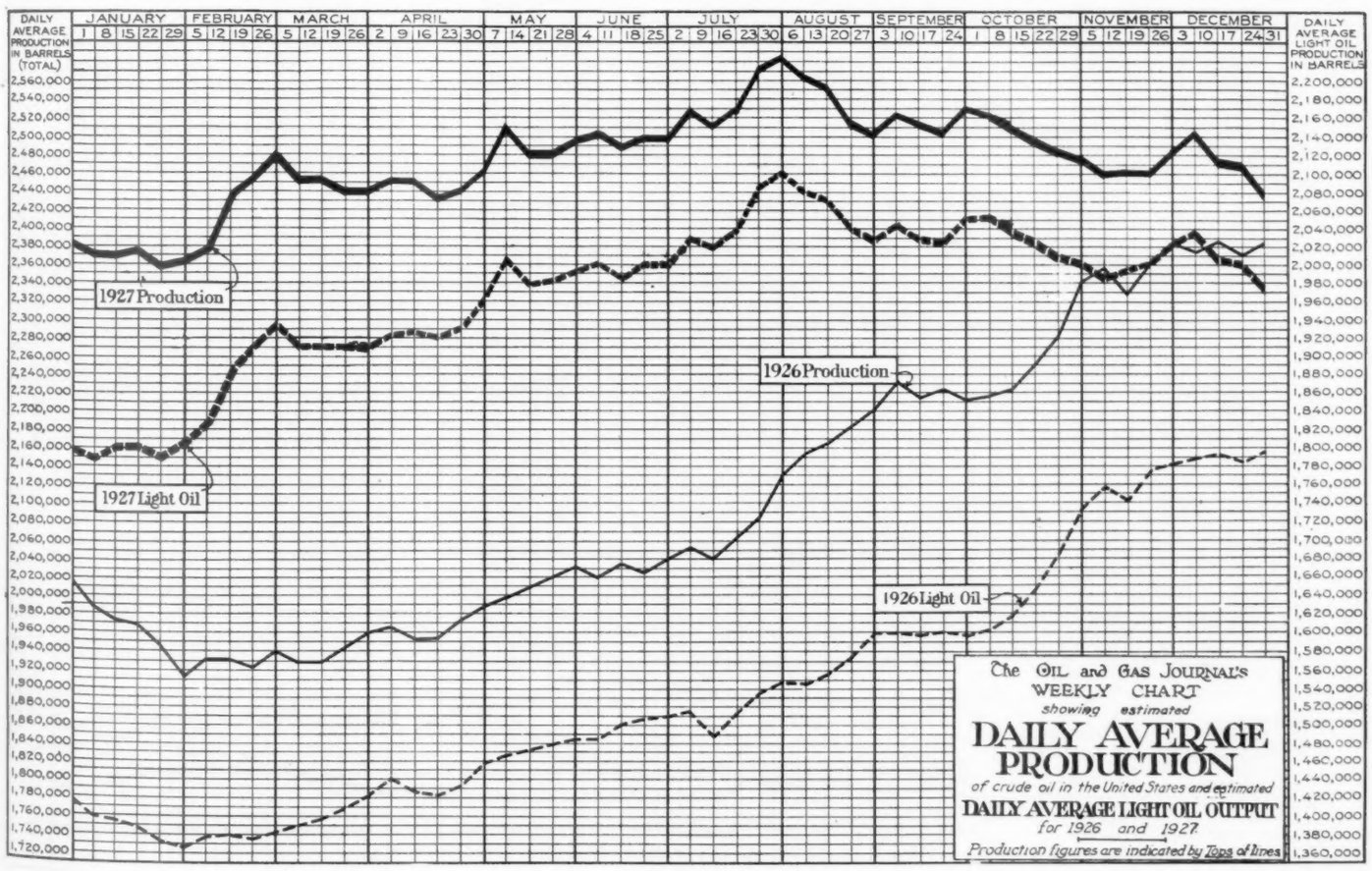
While considerable talk is still heard regarding higher crude oil prices, there seems to be a general agreement no change is warranted by conditions at this time and that greater benefit will accrue to all branches of the industry if the present price schedule is maintained until there is a greater demand for crude.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended December 24, and a comparison with the previous week follows:

	Dec. 24		Dec. 17	
Oklahoma—	Light	Heavy	Light	Heavy
Tonkawa	15,160	.....	15,565	.....
Burbank	36,785	.....	36,815	.....
Other Osage Fields	29,765	.....	29,835	.....
Cushing and Shamrock	21,045	.....	21,020	.....
Bristow and Eastern Bristow	24,535	.....	24,610	.....
Cromwell	10,595	.....	10,735	.....
Garber	10,415	.....	10,005	.....
Blackwell-Braman	8,760	.....	8,610	.....
Seminole	367,410	.....	381,070	.....
Wewoka	10,405	.....	10,370	.....
Northern Miscellaneous	110,610	.....	111,075	.....
Southern Fields	60,470	.....	60,685	.....
Total Oklahoma	705,955	.....	720,395	.....
North Louisiana	38,861	8,722	38,705	8,520
Arkansas	22,954	72,883	22,780	72,465
North Central Texas	134,135	.....	135,703	.....
West Texas	265,902	.....	271,619	.....
Texas Panhandle	82,950	.....	83,210	.....
East Central Texas	27,572	.....	27,942	.....
Kansas	105,410	.....	105,410	.....
Total Mid-Continent Area	1,383,739	81,605	1,405,764	80,985
Gulf Coast	.....	137,937	.....	144,908
Southwest Texas	.....	27,300	.....	25,846
Eastern	112,000	.....	113,000	.....
Rocky Mountain Area	78,366	.....	79,885	.....
California—				
Santa Fe Springs	38,000	.....	38,000	.....
Long Beach	112,000	.....	113,000	.....
Torrance	3,000	17,000	3,000	17,000
Huntington Beach	60,000	.....	60,000	.....
Dominguez	13,750	.....	13,750	.....
Rosecrans	9,000	.....	9,250	.....
Inglewood	19,500	12,000	19,500	12,000
Ventura Avenue	52,500	.....	54,000	.....
Seal Beach	43,500	.....	45,000	.....
Remainder of State	54,000	186,000	54,000	186,000
Total California	405,250	215,000	409,500	215,000
Total United States	1,979,355	461,842	2,008,149	466,739
Grand Total		2,441,197		2,474,888

Total Decrease, 33,691 Bbls.; Light Oil Decrease, 28,794 Bbls.



Holiday Lull in Refined Oil Markets

Oklahoma Shipments of All Products Largely Confined to Contract Movement. Expect Better Spot Movement First of Year

By W. T. Ziegenhain

Practically no price changes in the Oklahoma refined oil market developed during the Christmas week and in general shipments moved slowly. The lack of orders was accounted for by the desire on the part of jobbers to hold their January 1 inventories to a minimum along with diverting attention away from business over the holidays except to supply their day-to-day needs. Added weakness was displayed in natural gasolines, especially the cheaper grades as a high production continued to flow into a slow moving market. Limited export buying supported the A and AA grades somewhat, but the C grade was freely offered at a new low for the year.

Refinery gasolines found practically no outlet except on contracts calling for delivery over the month and on a few scattered orders to meet the jobbers' day-to-day needs. Sales managers said the week was the quietest of the year and were in hopes the new year would revive trading. Kerosene prices remained unchanged, but all grades were plentiful. All classes of fuel oil were freely offered with slight prices concessions reported being offered in a few cases, showing the weakness in that market and the lack of confidence in its immediate recovery. The position of gas oil remained unchanged as it continued to act in sympathy with the fuel market.

Lubricants moved slowly the bulk of the material going out as compounded oils. Cylinder stock developed added weakness, particularly the untreated grades. This condition obtained despite the purchase of a good quantity of the material for export. Bright stocks continued very weak as this product was freely offered throughout the normal Group 3 market territory by refiners outside of Oklahoma who generally disposed of their production elsewhere. Wax shipments showed no change, and while the market was considered heavy there was no evidence of price concessions being offered.

REFINED MARKET BAROMETER

Trading in all refinery centers was confined to supplying current needs and the effect of the Christmas holidays was to add weight to an already heavy market. There were very few price changes, but this was made possible through the hope of better times on entering the new year rather than an actual improvement in balancing supply and demand, for there continued to be plenty of material available from all refinery points. Gasoline was generally unchanged in the East and Mid-Continent, but was noticeably weaker in California. Natural gasolines were weaker both in California and the Mid-Continent. Kerosene moved slowly from the Mid-Continent, but was somewhat stronger along the Atlantic and Pacific, as the export shipments took a good share of the production. There was a continued free offering of gas oil, fuel oil and lubs in all sections, but prices remained unchanged. Cylinder stocks tended to weaken, while wax held at last week's prices.

Mid-Continent—Trading was unusually slow. Gasoline prices were maintained at last week's level, but natural gasoline developed added weakness, resulting in price concessions on the cheaper grades. Kerosene moved slowly. The balance of the refined market remained the same.

Atlantic Seaboard—Optimism resulted from the improved crude situation, but there was little actual cause for higher prices. Less distress gasoline was being offered from the Gulf and Mid-Continent, but the lesser consumption was sufficient to counterbalance that factor. Kerosene was firm as more export shipments were made. Bunker fuel remained unchanged. Cylinder stocks were generally quoted slightly below last week's prices. Neutrals were weaker.

Chicago—The general market was inactive, as attention was turned to the Christmas holidays. Kerosene was exceptionally dull. Zero gas oils and distillates moved at a good rate and were the only bright spots in the market. Fuel oil and lubs were unchanged.

California—The gasoline market was weaker. Retail prices were lowered in certain sections, indicating the general lack of confidence. Natural gasolines were weaker, as added production was thrown on the market. Export shipments of kerosene supported that market, while fuel oil was being freely offered by small refiners at slight price concessions.

Pennsylvania—The light oil market remained dull, but prices were maintained at last week's levels. Cylinder stocks were weaker. The balance of the refined oils remained unchanged.

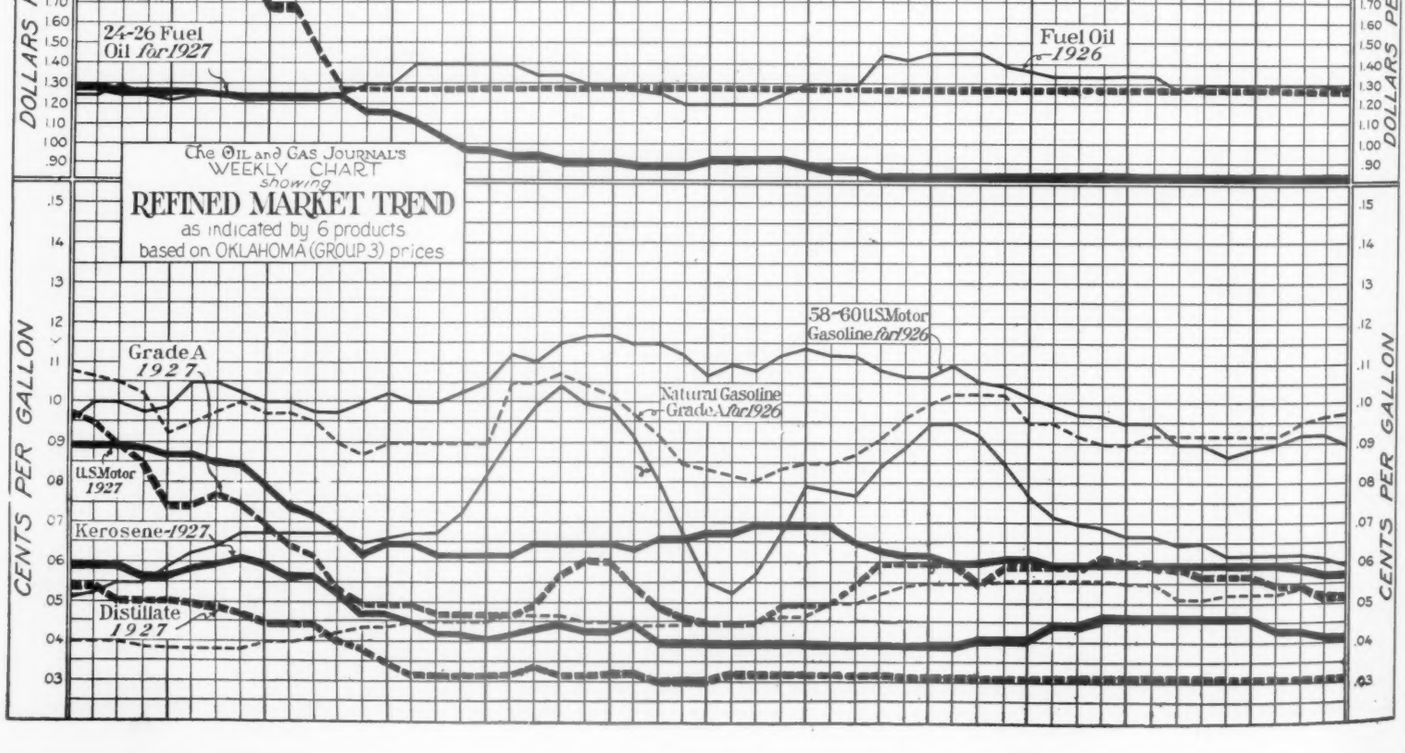
Gulf Coast—Prices were generally unchanged and except for the curtailing of operations in several of the plants there, the situation offers little encouragement for higher lub prices.

Pessimistic Outlook

As 1927 is brought to a close, there is no apparent optimism being shown on the part of sales managers in aticipation of higher refined oil prices in the immediate future. Most of them see no better conditions ahead until the start of the high consuming season next year, while others say things may change over night, but cite no good reason why they should. When analyzing the statistical position of the industry it is apparent the predominating demoralizing factor in the refined oil market is the tremendous stocks of crude oil being carried by producers and refiners.

This continues to be added to monthly and these additions have far overshadowed the decreasing gasoline stocks. Despite the fact gasoline stocks are at their lowest for several years, prices are also at the lowest level. With modern refining methods and ample refining capacity it is possible to increase the gasoline production to take care of any reasonable increase in consumption, and under these conditions increased crude

(Continued on Page 245)



Studying Corroding Action of Soils

Use of Pulverized Soil-Iron Mixtures Believed to Offer an Effective Method of Attacking the Problem

By H. D. Holler*
Research Associate of Cast Iron Pipe Research Association.

ASCERTAINING THE FACTS

The accompanying paper by Mr. Holler, Research Associate of the Cast Iron Pipe Research Association, National Bureau of Standards, points to laboratory tests which may largely supply information necessary for determining facts of soil corrosion prior to or without the necessity for burying such pipe in the soil in order to ascertain the action that will take place. The suggestions are unique in this respect and further tests promise a valuable addition to means of ascertaining facts relating to soil corrosion by a method more direct than that which has heretofore prevailed.

The field results of the Bureau of Standards investigation[1] on underground corrosion of iron and steel pipe show that both the rate of corrosion and the character of corrosion products are determined to a large extent by the soil. The term "soil" as used here is intended to include moisture, salts, organic matter and all other materials that may be present.

Up to the present time, the field results have not been correlated with any of the known characteristics of the soil, that is, with the electrical resistivity, acidity, texture or any of the ordinary features used to describe soils. The difficulty in arriving at any correlation hinges on the lack of knowledge concerning the factors in soils which may promote or retard corrosion; and it appears that a search for these factors must be made if there is to be any adequate explanation of the results thus far obtained under field conditions.

Since soil corrosion is ordinarily a relatively slow process, experimental work under field conditions requires intervals of time extending over months and years in order to obtain results of commercial value. The purpose of the laboratory work on corrosion is to select if possible such conditions that results may be obtained in much less time than is otherwise possible. It seems therefore that the first essential step from a laboratory standpoint should be the invention of a suitable method of measuring the rate of corrosion under as definite conditions as are experimentally practicable. If such a method can be so devised as to give reproducible results under known conditions, a program of laboratory corrosion experiments may be laid out for determining the effects, perhaps quantitatively, of the numerous factors in soils which control corrosion.

Problem in Electrochemistry

Since the purpose of this phase of the work is to distinguish between soils rather than between pipe materials, the problem becomes a soil study rather than a comparison of different kinds of pipe; and since the process of corrosion is an electrochemical reaction, the study of the soil factors which promote or inhibit the rate of this reaction is a practical problem in electrochemistry.

The rate of corrosion may be expressed either as the average loss in weight per unit area of the material, or as an average depth of penetration per year. A loss of 1 ounce per square foot per year (about 3.3 grams per square decimeter) is serious, particularly if the rate of pitting is high. In order to account for this rate of corrosion, only 0.95 to 1.42 grams of oxygen per dm^2 are necessary, the exact amount depending upon the relative proportions of corroded iron in the ferrous and ferric states. This oxygen may be supplied in one or more of the following ways:

1. Air may penetrate the soil by the process of gaseous diffusion. To oxidize iron at the above rate, a volume of air in the neighborhood of 30 to 50 liters, depending on temperature and atmospheric pressure, would be required on each dm^2 per year. In sandy or loose soil, a considerable amount of oxygen necessary might be supplied by this process of diffusion.

2. Air may be dissolved in water and be carried to the corroding surface. In order to account for the rate of corrosion assumed above, a volume of water in the neighborhood of 100 to 160 liters would be required to dissolve sufficient oxygen from the air. In customary units, this is about 245 to 390 gallons of water per square foot of iron surface per year. This amount of water is many times that which could be supplied by the rainfall; the maximum average rainfall at any of the field locations during the period of burial being only 66 inches (about 168 cm.) at Bunkie, La. It appears obvious that only a very small part of the oxygen could possibly be supplied by the air dissolved in rain water.

Decomposition of Water

3. Oxygen may be supplied by decomposition of water. If iron reacts directly with water, only 1.07 grams of water would be necessary to account for 3.3 grams of iron. In customary units, this is about 0.35 ounce of water per square foot per year and would require only a small fraction of the rainfall, even where the rainfall is a minimum as at Bakersfield and Buttonwillow, Calif. Here, the average rainfall during the period of burial was 6 inches (15 cm.). In addition, sufficient water may be supplied by capillarity from ground water at depths considerably below the buried pipe.

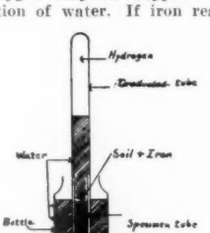


Fig. 1—Arrangement of apparatus for collecting hydrogen gas evolved from a mixture of soil and pulverized iron.

4. Both the metallic and nonmetallic oxides in the soil may be a possible source of oxygen for underground corrosion through the process of "base exchange," but there is no evidence at hand on this point.

In compact clays where the supply of air by gaseous diffusion or aqueous solution is certainly too limited to account for the amount of corrosion observed, the oxygen must be furnished by decomposition of water already in the soil. Iron may react with water just as sodium does, forming the hydroxide and liberating hydrogen gas, the rate of reaction being catalyzed by the soil constituents. If this does occur, it would seem possible that hydrogen evolved by the reaction might be collected and indicate to some extent the mechanism of the reaction.[2] Iron corroding at the rate of 3.3 grams per dm^2 per year according to this reaction should liberate gas at the rate of 3 to 4 milliliters per day—a readily measurable volume.

Hydrogen Gas

If the mechanism of soil corrosion is as simple as here suggested, then it should be possible to compare the corrosiveness of different soils by measuring the rate at which they liberate hydrogen gas from a given sample of iron under specified conditions. A series of experiments was made to investigate this possibility. Preliminary tests were first made to determine whether any gas was liberated from wet soil known to be corrosive. For this purpose, small steel wire nails were mixed with a sample of Susquehanna clay in a flask and covered with water. On the following day several milliliters of gas had escaped from the mud and accumulated in an inverted test tube through displacement of water. This action was so prompt that it seemed desirable to set up additional tests with different types of soils. For this purpose the following soils were mixed with nails, covered with water, and provision was made for collection of gas: Sandy loam, Susquehanna clay, muck, Everett gravelly sandy loam, and silt loam. Blanks were set up at the same time with no nails.

At the end of one week the Susquehanna clay had evolved about 10 milliliters of gas, while the sandy loam and gravelly sandy loam had produced about 1 milliliter. The muck and silt loam showed no action. The blanks in no case showed any evolution of gas.

While these preliminary tests showed that liberation of gas is to be expected, it was slow and means of accelerating the action without addition of other materials seemed desirable. In such a reaction involving active metal surface, the obvious method of increasing its rate is to increase the surface area, which may be done by using the iron or steel in a finely pulverized condition. In the case of cast iron, the preparation of the pulverized metal may be easily accomplished by grinding cast-iron borings in an iron mortar. In the following tests, cast iron which passed through a 50-mesh sieve was used. For collection of gas, the scheme in Figure 1 was satisfactory. Mixtures containing 10 grams of soil and 10 grams of cast iron were poured into water (to avoid trapping of air) contained in specimen tubes and the whole outfit was filled with water. Under these conditions the reaction occurs with a large surplus of water and practically no air.

Prompt Action

In most soils action began promptly, while in case of a few action was delayed for several days before showing any gas. The volumes of gas evolved (Figure 2) show a wide range in activity among different soils with respect to this test. In the case of several typical soils for which repeated tests were made to determine how closely the measured volumes of gas would agree, the results usually checked within 1 or 2 per cent. The results can be reproduced so closely and the range in activity among different soils is so great that the amount of hydrogen evolved may be considered as a characteristic of a given soil; and the test may be valuable for determining whether one soil is more corrosive than another under these particular conditions. It must be remembered, however, that this test is made without air and with an excess of water, so that very important factors are thereby prevented from affecting the reaction.

The "sandy" and "gravelly sandy soils" all gave smaller volumes of gas than did the "silt loams" and "clays." The evolution of gas appears to depend directly on the fineness of the soil. This may be due to the greater reactivity of the soil particles which are of colloidal dimensions or to the lowering of the overvoltage at which the gas is liberated on very small particles or both. It may be found that the comparison of the corrosivity of soils on the basis of the hydrogen-evolution method should be made only between soils of the same degree of fineness or texture. The soil literature indicates that the colloidal content is related to the fineness of a soil, so that it should be of value to compare the relative colloidal content of the different soils with their ability to liberate hydrogen. For this purpose, the hydrometer method[3] of estimateing the colloidal content of soils might be readily applicable.

Gas and Oxidation

Having shown that considerable amounts of gas may be rapidly liberated, it next seemed desirable to determine whether the volume of this gas is equivalent to the amount of iron oxidized. Only two experiments were completed on this point, using a sample of Susquehanna clay and one of the Denver sandy loam. These soils were selected for comparison, because they proved to be very corrosive in the field, although of widely different textures. These experiments indicated that the amount of iron oxidized in contact with the sand was somewhat greater than would be expected from the volume of gas given off, while that in the clay checked closely with the amount of liberated gas. The residual iron in each case was estimated by dissolving in hydrochloric acid and measuring the total volume of hydrogen produced. Additional experiments are planned, using a more accurate method of estimating the metallic iron.

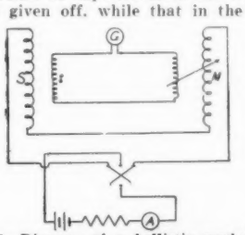


Fig. 3—Diagram of a ballistic method of measuring magnetic flux. A—ammeter for indicating current through solenoid "S"; "t"—test coil in which sample is inserted; M—variable inductance to compensate for flux not due to sample; G—ballistic galvanometer.

In this connection work has been done on developing the use of the mercuric-chloride method for accurately determining the amount of noncorroded iron in a

(Continued on Page 187)

*Publication approved by the director of the National Bureau of Standards, Department of Commerce.

[1]K. H. Logan, Trans. Foundrymen's Assn., Vol. 32, p. 144 (1925), and Preprint No. 27-10, Foundrymen's Assn. (1927).

[2]Corrosion of iron in absence of oxygen has been studied by J. W. Shipley and his coworkers at the University of Manitoba. J. W. Shipley and others, Ind. and Eng. Chem., Vol. 17, p. 381 (1925).

[3]G. J. Bouyoucos, Soil Science, Vol. 23, No. 4, April, 1927.

A.L. Beaty Leaves The Texas Company

Announces His Resignation From Chairmanship of Board and as a Director. To Continue Association With Industry

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Dec. 26. — Amos L. Beaty, who has resigned as chairman of the board of The Texas Corporation after only a little more than a year's service in that capacity, will not be lost to the oil industry, according to information obtained from what is believed to be a reliable source. It is understood that he will make a connection in the near future which will give him a better opportunity to exercise his knowledge of the legal phases of the oil business than his position as head of The Texas Corporation, one of the largest independent oil units, afforded.

Judge Beaty would not discuss his future plans, but it was assumed that if he had had the intention of retiring from the oil business he would have made a statement to that effect. His friends, of whom he has a great many in the oil industry, are unanimous in predicting that his retirement from The Texas Corporation was merely significant of plans now under way for closer co-operation between the oil industry and the Government on matters of legislation, in which he is expected to take an active part.

As a leading authority on legal matters affecting the oil industry, Judge Beaty has served on various committees of the American Petroleum Institute, and he has not as yet given any indication of relinquishing these activities. He was chairman of the A.P.I. Committee on Agreements which rendered an important report at the recent annual meeting of the institute held in Chicago. The report recommended a program of legislation, Federal and state, giving sanction and effect to agreements by oil producers for the curtailment of production in pools where and when there is overproduction, for the purpose of the economical and orderly production of oil. The committee also stated its belief that the purpose of the resolution would be accomplished if the oil-producing states, especially at this time, California, Oklahoma and Texas, would pass a simple enactment regarding agreements among operators, the exact wording of which was suggested.

While developments along the lines suggested cannot be anticipated, it is evident to those who have followed the work of the industry in the matter of co-operation that events of larger importance along this line than anything yet accomplished are in store for 1928.

Judge Beaty's Career

Mr. Beaty practically grew up in the oil business with The Texas Company, serving the company approximately 21 years. He began his connection in its legal department in 1907 in Texas, of which state he is a native. He had been a state court judge before going with the company. In 1920 he became president of the company and in March, 1926, was made chairman of the board.

Since becoming chairman, Mr. Beaty developed to a high degree the marketing end of the company's business, and the company experienced the greatest prosperity it has ever known. His company was one of the co-defendants in the famous government gasoline "cracking" suit, which case was recently decided in favor of the defendants. Another outstanding event in the affairs of the company during his tenure of the chairmanship was the formation of The Texas Corporation under the laws of Delaware to succeed the old company, The Texas Company, which was organized under the laws of the State of Texas.

Mr. Beaty was a particularly close friend of the late John J. Mitchell, a director of The Texas Corporation, and associated with leading Chicago banking interests. Mr. Mitchell's death came suddenly as the result of a motor accident. He is reputed to have represented leading stockholders' interests in The Texas Company, among which were those of the late John W. Gates, one of the founders of the company. The Gates interests are also represented on the board of The Texas Corporation by J. H. and L. H. Lapham. The Standard Oil Co. of New Jersey formerly had a substantial stock interest in The Texas Company. It is not known whether this interest still exists.

One of the leading projects of The Texas Corporation now under way is that of the construction of a pipe line from the Amarillo gas field in Texas, to Omaha, Neb., for the purpose of supplying the latter city with natural gas. This project is in conjunction with the Columbian Carbon Co. It is not known if Mr. Beaty's retirement will interfere with the carrying out of that plan, but it is understood the deal had just about reached the point of consummation a week or so ago.

President-Holmes in Charge

President R. C. Holmes has been in full charge of The Texas Corporation's active operations for some time. He has been connected with the company many years, and it was in recognition of his services over a long period of years that he was made president in 1926 in succession to Judge Beaty. He is best known as the co-discoverer of the Holmes-Manley process of cracking gasoline. He will act as chief executive officer of the corporation hereafter, it is understood.

Mr. Beaty was mentioned prominently for the presidency of the American Petroleum Institute at the recent annual meeting of that body in Chicago. He declined to accept a nomination, and it was assumed he had in mind his retirement from The Texas Corporation when he asked that his name be withdrawn.

Industry Holds Commanding Place

Remarkable Prosperity of Automotive Machinery Manufacture Built Largely on Petroleum's Utilization of Its Products

By Thomas F. Smiley

What would happen if the oil industry suddenly were to vanish from the face of the earth?

A fanciful question of course, but there's no harm in asking it. If you don't chance to be busy, just consider the situation that would arise if the oil business were to take it into its head to efface itself, fade into oblivion without trace. What results might be looked for?

Results? Why, within 24 hours results would be the most numerous thing in the cosmic order. Mankind would have to duck, dodge and jump to keep from stepping on them or bumping into them in the dark.

The electric lights would go out. The family automobile would refuse to budge. Railroad trains would stall on tracks for want of lubricating oil. Steamships would be marooned in midocean for the same reason. Great cities would be left without food, clothing and the other necessities of life. Famine, black despair, death.

Oh, well, the lights aren't going out, the lizzie will continue to function and none of the other terrors will materialize, for the truly delightful reason that the oil industry has no notion of doing anything else than marching right on to fresh economic and scientific triumphs and to new achievements for the greater comfort and pleasure of humanity.

Let's take the manufacture of automotive machinery for instance. There's an industry that has grown and flourished like the green bay tree, if that is the thing that is supposed to convey a clear idea of rapid growth and phenomenal prosperity. Anybody will tell you that the automobile industry has grown so fast that statisticians have acquired St. Vitus' dance trying to keep up with figures that sound fantastic and that no man would believe unless he had tried to get to the other corner of a downtown street at 5 p. m. when the traffic cop was off duty.

Any schoolboy knows—he doesn't know of course, but it seems necessary to say so—that on July 1, 1927, there were 20,731,191 passenger cars and trucks registered in the United States, a gain of 1,164,329 in one year. When the statistician is asked what effect the new Ford will have on total production and sales figures his eyes become glassy and strange sounds issue from his mouth.

Oil Industry Takes 165,530

All very wonderful and interesting. But if you hadn't thought of it before, take note of the fact that of this bewildering swarm of automotive vehicles 165,530, it is estimated, were in the service of the oil industry on July 1, 1927.

They were trucks, hauling rig material, boilers, engines, drilling equipment, casing and lumber to new locations; carrying pipe, welding apparatus, pumpstation machinery and workmen themselves to pipe line projects, or performing some of the other thousand and one tasks in connection with the production, transportation, refining and marketing of petroleum and its products.

They were passenger cars, conveying company officials, superintendents, foremen, technologists and workmen from one point to another in the administration of a vast and intricate business.

Then there were tractors, lumbering clumsily about the oil leases, pulling rods, casing and tubing; snaking boilers, skidding derricks, moving buildings and tanks and doing general maintenance work.

There were hole-drillers, equipped with "gin pole," a device for raising a telegraph or telephone pole to a vertical position and dropping it into the hole prepared for it. These were employed in the construction of private telegraph and telephone lines.

Think what it would mean if the users of these 165,530 machines were to drop out of the picture. It doesn't need a certified public accountant to figure out that the withdrawal of this amount of business from the automobile industry would leave many manufacturers in a bad way and that for a long period of time the automotive machinery business would bear as close a similarity to the green bay tree hereinbefore mentioned as a bright new dime bears to one minted in 1882 and flattened by a street car.

"Well, what would the gasoline manufacturers do if the 20,731,191 owners of automobiles and trucks were to stop using gasoline?" snorts some belligerently disposed person.

Glory Enough for All

Now now, there's no need of talking like that. As Admiral Schley remarked on a historic occasion, "There's glory enough for all." The purpose of this little excursion into statistical regions is not to deprecate the automobile business. No, sir, not while the little coupe continues to impart joy and gladness from day to day, not to mention nights.

To remove any suspicion on this point, it here and now is admitted right cheerfully that if the 20—aw, let's not copy off that string of figures again—if all those motorists were to withdraw their valued patronage the oil industry would have a bad case of acute indigestion on its hands, or wherever industries have their cases of indigestion.

This interdependence of various industries—"interpenetration" the statisticians call it—is well understood. Just one phase of it—a very interesting phase it is, too—is being dealt with here, with no wish to hurt anybody's feelings or to hurl dornicks at a great and indispensable industry.

Having thus demonstrated largemindedness, we may be permitted, perhaps, to come right back at the man who tried to heckle us and to ask him, what would the users of automobiles and trucks do if they couldn't get the oil man's gasoline? There's something for him to think about. It just indicates still further the extent to which another and highly esteemed industry looks to the oil business for its continued smooth running, doesn't it?

It is estimated that of the 165,530 trucks and motor cars in use by the oil industry in this country at the middle of the present year 52,500 were trucks of various capacities and 113,030 were motor cars. Besides these there were hundreds of tractors and other kinds of automotive machines.

Some indication of the growing use of trucks by the oil industry, and hence of the industry's increasing importance to manufacturers of automotive machines, may be gleaned by a glance at records kept by the manufacturers. The Standard Oil Co. of Kentucky, for example, beginning with one truck of a well-known make in 1911, increased its holdings as follows: 1912, 2; 1913, 4; 1914, 5; 1915, 9; 1916, 38; 1917, 75; 1918, 121; 1919, 349; 1920, 360; 1921, 398, 1922, 420; 1923, 452; 1924, 465; 1926, 495. The Standard Oil Co. of New York leaped from 3 of these trucks in 1910 to 1,032 in 1926. The Atlantic Refining Co., which had 1 in 1919, had 545 in 1926. The Gulf Refining Co., with none in 1910, was using 1,929 in 1926. Scores of other oil companies might be cited to show how the petroleum industry has kept the truck manufacturer, and the passenger car manufacturer, too, on the jump.

Uses More Than Any Other Industry

The manufacturer of the trucks referred to in the foregoing figures makes the printed assertion that more of these machines are in the service of the oil industry than in any other one industry and that five new ones were going to work in this business each working day

(Continued on Page 243)

New Petroleum Developments Abroad

Summary of the Situation in Foreign Fields and Markets During the Past Month. French Hasten Law

Expected petroleum legislation in France calls for a brief review of recent petroleum legislation efforts. It will be remembered that under the terms of Article 53 of the law of April 4, 1926, creating new fiscal resources, the importation into France of crude petroleum, its derivatives and residues was, beginning April 1, 1927, to be made only by the representatives of the state or the persons accredited by it. A special law was also to be passed before that date fixing the general regulations for the organization of the import monopoly by the state for its concession to a company under state control. A law of March 31, 1927, postponed until January 1, 1928, the date of setting up the monopoly in question. The Petroleum Committee of the Chamber held a meeting on October 11, 1927, at which various reports were made on the general petroleum situation. Up to that time the government had not presented any new petroleum bill and it was thought unlikely that the law could be passed before January 1, 1928, as the Chamber activities were to be devoted entirely to discussions of the budget.

Quite unexpectedly the French government has now proposed a new petroleum law to become effective January 1, 1928, which it is understood has every possibility of being adopted within a short time.

Text of the Bill

A rough translation of the bill in question follows:

Bill

The President of the French Republic,

Decrees:

The bill, the tenor of which follows, will be presented to the Chamber of Deputies by the President of the Council, Minister of Finance, by the Minister of Commerce and Industry, by the Minister of Foreign Affairs, by the Minister of War, by the Minister of the Navy and by the Minister of Public Works, who are charged with the motives thereof and supporting the discussion:

Article 1: The wholesale importation of crude petroleum, its by-products (derivatives) and residues shall be made under the control of the State, either under the regime of a license instituted by the law of January 10, 1925, or under the regime of a special license as defined by the following articles.

Under the regime of a special license shall be placed all imports equal to or superior to 500 tons per month.

Imports inferior to this figure shall remain under the regime of the law of January 10, 1925.

Article 2: The special authorization (or license) shall be given by decree of the Council of Ministers, after the advice of a Commission composed of the Directors of the National Office for Liquid Fuels and of a representative of each of the Ministries of Finance, Foreign Affairs, War, Navy, and Public Works.

This authorization may be renewed.

Article 3: The decree provided for in the preceding article shall determine notably:

(a) The principal object of the enterprise.

(b) The nature of the products imported—crude petroleum, derivatives or residues, and the maximum annual figure of the imports authorized.

(c) The duration of the special license, which cannot exceed 15 years for crude petroleum and 3 years for derivatives.

(d) The obligations of the holder of the special license concerning the constitution and division of the reserve stocks by nature of the products imported, and the priority of supplies to the public services.

(e) The obligations of the holder of the special license to assure eventually, in proportion to his imports and at the request of the State, the execution of contracts of national interest for the acquisition of petroleum or substitutes, either directly or indirectly for participation in organizations which may be established for this purpose.

(f) The deposits or guarantees which may be required.

(g) The conditions and forms under which forfeiture may be pronounced in respect of or in observation of the obligations imposed upon the holder of a special license.

Article 4: Any change of ownership of the special license or any total or partial cession of the rights can only take place with the approval of the Council of Ministers.

Article 5: The persons or companies which, prior to the promulgation of this law, carried on a wholesale import trade in crude petroleum, its derivatives and residues, shall have the right to obtain a special license based upon a figure at least equal to the maximum figure of their annual imports during the last five years. They shall be subjected, however, to the provisions of the present law and must submit their request for a special license within a maximum of three months after promulgation of the law.

Article 6: The Minister of Commerce and Industry shall control the execution of the foregoing provisions. To this end, his agents shall have access to importers' establishments and may demand to be furnished with the necessary documents for carrying out this control.

Article 7: All legislative provisions or regulations prior and contrary to those of the present law are abrogated.

Done at Paris, November 16, 1927.

Undoubtedly such a regulatory measure will be preferential to a state monopoly of all oil products but as an intermediate step in such a direction this measure, if and when it becomes effective, will be looked on with askance by American interests.

Fuel Oils in Germany

According to a recent report from Germany the I. G. is negotiating with the G. M. B. H. Benzol Betrieb of Berlin. This follows on another report which states that the I. G. has not barred the way to an understanding with the domestic producers of fuel oils, in particular with the Benzol sales organization of the German mining interests, although it has placed the sale of its synthetic gasoline in the hands of the Deutsche Gasolin A. G. in which American and Dutch are interested. Some months ago the I. G. and the Ruhr district mine owners negotiated without results in regard to the situation of projected distillation plants. The Ruhr industrialists prepared for an energetic stand by means of patent purchases and improvements in old processes of coal liquefaction. In regard to quantities, no reliable figures are known, and most estimates are based on conjecture. It is even difficult to estimate the fuel requirements of Germany which are increasing rapidly and at an uneven pace. In 1926, Germany is said to have imported gasolines and benzines in the amount of 559,000 tons. Further quantities were supplied from German coke ovens, gas works and distillation plants. The 1928 capacity of the Leuna synthetic oil plants will probably be about 300,000 tons. It is stated that two cars running in the Feldberg races in October used synthetic gasoline.

Poland Seeks Production

Advice from Warsaw, Poland, States that for the purpose of encouraging oil companies operating in Poland to extend their development activities, with a view to the discovery of new areas to offset the continuously diminishing production from existing fields under exploitation, a decree has been prepared under the direction of the Ministry of Commerce and Industry and submitted to the President of the Republic of Poland for the necessary signature to give it full legal effect. Included in this decree are the usual reductions and freedom from taxes in the new areas, permission to export certain quantities of crude oil from new wells, exemption from royalty charges on discovery wells located on state land under certain limitations, etc. It is too early yet to ascertain the probable effect on the Polish petroleum industry by this decree.

Kerosene in China

From the Pacific Coast we find that interests closely identified with the Cantonese Nationalist Party of China have been showing considerable interest in obtaining estimates on bulk oil tank installations for a proposed kerosene monopoly in Central China and have also discussed possible connections with several of the Californian independent refiners. It will be remembered that the Cantonese attempted to establish such a monopoly in Canton within the past two years and after protracted bargaining with established companies finally decided upon a sales tax as a substitute for the monopoly. Possibly a similar move for Shanghai and Central China is now in progress.

Developments in Venezuela

For the past six or seven months the Lago Petroleum Corporation has been sending all or a greater part of its Venezuelan oil from Aruba, D. W. I., to Tampico, Mexico, to be refined in the Huasteca refinery there. Lago has greatly increased its production in the Lagunillas Field. For a time in June it was exporting only 11,000 barrels a day from that field, during July it was moving 41,000 barrels a day out of this field and the September records show an export of 45,000 barrels per day. The number of rigs in this field has been increased from 4 to 7 and it is reported that 30 drilling rigs are contemplated for the near future with an export of 100,000 barrels a day by June, 1928. The Venezuelan Gulf Oil Company has let contracts in Pittsburgh for four more 80,000-barrel storage tanks for its loading station on the Paraguana Peninsula which will bring the company's storage at that place to 800,000 barrels.

Exports of Crude Petroleum from Fields of the Maracaibo Basin for the First Nine Months of 1927.
(In Barrels of 42 Gallons)

Month—	El Grande	El Mene	La Paz	Concepcion
January	425,677	244,222	13,622	153,567
February	413,691	235,903	86,934	33,741
March	484,147	237,290	13,690	133,576
April	445,470	218,368	.....	116,059
May	450,590	204,323	47,402	80,551
June	522,933	202,725	16,187	99,113
July	405,076	187,052	.....	.....
August	510,838	169,273	.....	.....
September	775,098	186,295	.....	17,175
Totals	4,433,520	1,885,451	177,835	633,782

Total exports all fields first nine months, 37,288,594 barrels.

British Controlled Oilfields, Limited, policy not extending the proven territory finds its production declining and chief assets is a one-fifth interest which it holds in the Central Area Exploitation Company.

Conditions in Colombia

The following figures show the progressively increasing importance of Colombian exports of crude oil by the Tropical Oil Company (Standard Oil Company of New Jersey) from the port of Cartagena, Colombia, the tidewater terminus of the Andian National Corporation's pipe line, during each month of the present year and the totals to date (in barrels of 42 gallons):

	Barrels
January	907,772.12
February	843,681.47
March	784,702.36
April	793,119.64
May	1,099,175.90
June	780,944.93
July	1,008,521.99
August	1,285,788.49
September	1,518,100.39
October	1,638,879.05
Total	10,660,686.34

A new record is established by October shipments which exceeded those for the corresponding month of the year 1926 by more than 1,000,000 barrels.

(Continued on Page 247)

FOREIGN REVIEW

High points in The Oil and Gas Journal's monthly review of petroleum developments abroad include the unexpected haste of the French in pressing the proposed petroleum monopoly law, fuel oil negotiations among German producers, Poland encouraging oil companies to extend operations, progress in Venezuela, concern about the proposed new petroleum law in Colombia, and the Yates-Anglo Persian contract, Panama's import duty on gasoline and the amazing record growth of Soviet oil exports, the largest share of which was taken by Italy with France and England holding second and third place as buyers of Russian products.

Reason for Buying Oil from Soviet

Economic Considerations Altogether Apart From Political Dispute. Natural Outlet for Production Main Factor

By N. O. Fanning
New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Dec. 24.—In the discussion over Russian oil, the political side has been overemphasized, and the purely economic factors have received too little attention.

It is the statement of leading authorities on the situation that Russian oil has a certain economic status in the foreign markets in relation to the amount of production available for export and the distance of markets from the Russian fields. Russia is bound to be a factor in these markets, irrespective of the wishes of competitive interests.

The logical outlet for Russian oil products outside Russia is the territory embracing south central Europe and the Near East. Russia can reach these markets in competition with all other fields and can logically undersell its competitors. With the steady increase in oil production in the Russian fields since 1919 exports to this territory increased proportionately.

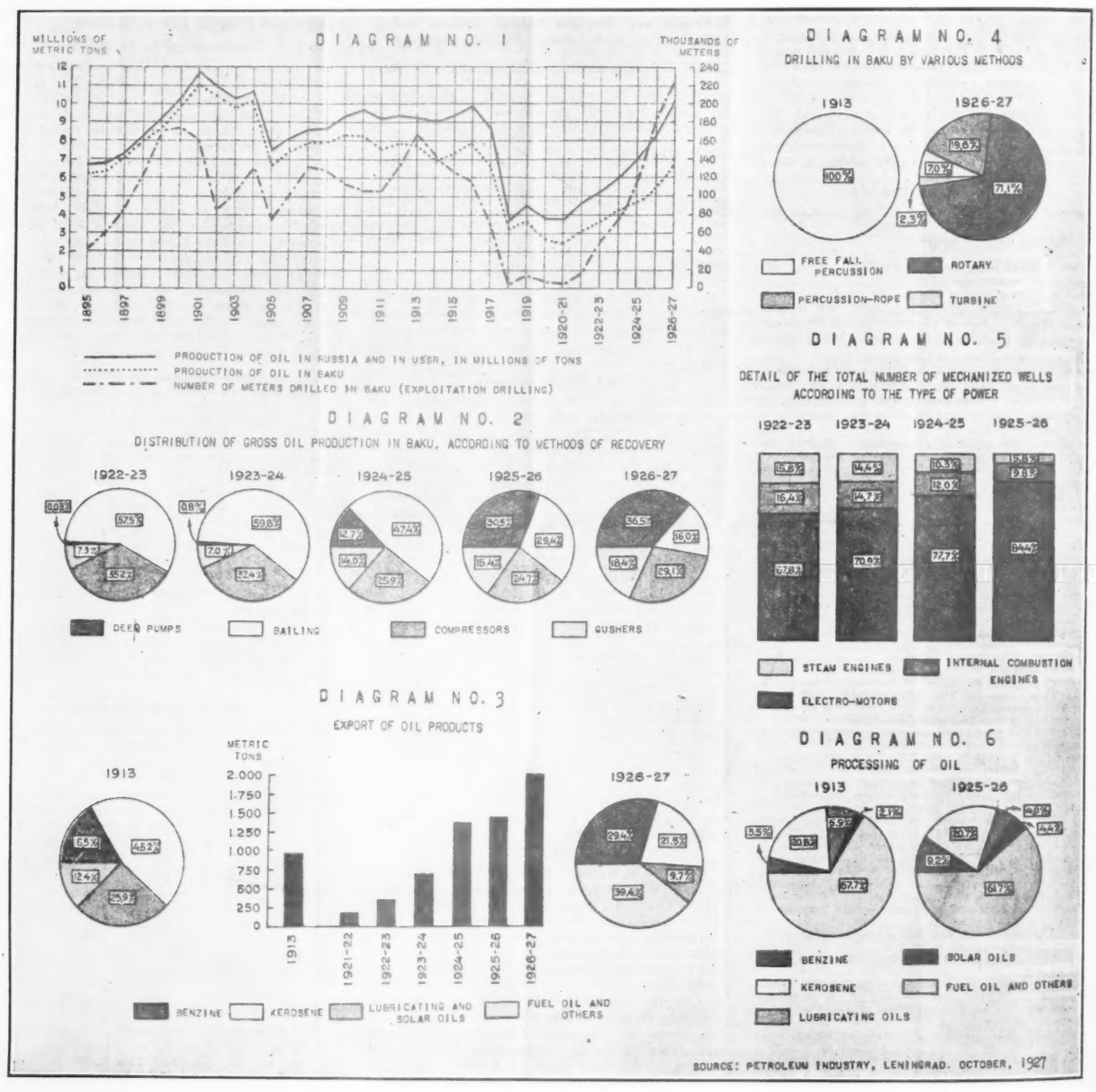
The decision of the Standard Oil Co. of New York and the Vacuum Oil Co. to handle the Russian oil products in these districts merely resulted in a transfer of the marketing end of the Russian oil business from Russian to other interests, and did not involve the entrance of Russian oil in this territory for the first time, as many have supposed.

The three leading marketers in south central Europe and the Near East are Russia, Standard Oil and the Dutch-Shell. This created a disturbing three-cornered situation, especially when Russian oil was being marketed at extremely low prices. The taking over of the Russian end of the business by Standard Oil Co. of New York and Vacuum Oil reduced the number of major operating companies from three to two. The Vacuum Oil Co. is using Russian crude oil in its Czecho-Slovakia and Hungary refineries, and is marketing Russian oil products in Egypt. The Standard Oil Co. of New York, under recent contracts, is marketing Russian oil in the Near East and India.

The decision of the American companies to purchase Russian oil was probably based on the fact that Russia was bound to compete in these markets at any rate and also on the fact that from an economic viewpoint the contracts were sound. In the belief of students of the situation their move was a wise one.

The Dutch-Shell campaign against the Standard Oil Co. of New York, Vacuum Oil Co., and the Soviet Oil Trust is di-

(Continued on Page 193)



Venezuela's Remarkable Development

Challenging Mexico as Third Oil Producing Country. Review of Present Situation There and Prospects

By Edwin B. Hopkins and H. J. Wasson

One of the most important events in contemporary oil history which prominently stands out when viewed with a proper perspective in relation to the world situation, was the change in the relative importance of two of the leading oil countries—Mexico and Venezuela.

When the final figures for the year 1927 are available it will be found that the ranking order of the leading oil producing countries, so far as daily production at the end of the year is concerned, will be: United States, Russia, Venezuela and Mexico. So far as total production for the year 1927 is concerned, Russia will definitely occupy second place, but at this writing it is not certain whether Mexico or Venezuela will follow in third place, as the total production of both of these countries for the year will be very close to the same figure. However, with the one country rapidly on the increase, and the future of the other not nearly so well defined, it appears reasonably certain that the ranking position has definitely passed from Mexico to Venezuela.

Venezuela, having in general possibly no greater oil reserves than some of its rivals, has rapidly advanced itself to the forefront, primarily because it first laid down laws for the control of its industry along lines which permitted the winning of a profit by such capital as might be willing to run the risks of exploitation, and then saw to it that the letter of the law rested on a real foundation of good faith, and a spirit of fairness. Assured and guaranteed this "even break" capital in abundance was found willing to assume the risks; and as a result and after heavy expenditures, the Venezuelan oil industry has been established as a large scale factor in world affairs; a venture profitable in a general sense to the capital invested, and of inestimable value to the progress, wealth, and culture, of the Venezuelan Republic and its citizens.

Three Main Divisions

Accompanying this article is an outline map of Venezuela, which shows the three main geographic divisions commonly referred to in connection with the oil developments. The most widely known region is, of course, the Maracaibo Basin, which, together with the State of Falcon, composes the territory generally known as northwestern Venezuela. Considerable oil activity is also being carried on in the area known as eastern Venezuela; and the third main geographic division, central Venezuela, is now being carefully explored, and no doubt will eventually become of importance in the general oil picture. The inserted key map shows the position of Venezuela with respect to the United States, and the other countries of South America; it may be interesting, and no doubt a surprise to many, to note that the distance from New York to Lake Maracaibo is only approximately 1,850 miles, or about the same distance as by water to Galveston, Tex.

The other map shows in some detail the northwestern Venezuela region. It is in this locality that all but one of the present known commercial fields are located, the exception being the Guanoco Lake heavy oil field in eastern Venezuela.

Developments in the Maracaibo Basin during 1927 continued at an active pace. No new shipping fields were opened up during the year, but enormous extensions to proved territory were made in several of the old fields; and these have resulted in adding exceedingly large increments to the already proved and semiproved underground oil reserves. A full appreciation of the extent of the present proved reserves in Venezuela would go a long way toward dispelling the fear that may be felt by some of our misinformed oil politicians with respect to any imminent shortage of motor fuel. As a concrete statement of the situation it may be said with reasonable safety that the indicated semiproved reserves in Venezuela at the end of 1927 were 1,000,000,000 bbls. larger than they were at the end of 1926; and, as will be noted from the table summarizing field operations, the total amount of drilling was not great. In this connection, it is well to point out that special conditions make it unlikely that a corresponding rate of increase will continue during succeeding years; still it is safe to say that many years will elapse before this building up of reserves becomes balanced by the oil actually taken out of the ground.

SUMMARY OF 1927 OPERATIONS IN ACTIVE FIELDS

Field—	Wells Drilling at End of Year	Producers Compl'd During Year	Dry Holes During Year	Approximate 1927 Production	Total No. of Prod'g Wells	Wells Aban'd During Year	Gravi.y Degrees Baume	Age of Field Years
Mene Grande	9	35	0	9,200,000	120	15	18.5	11
La Rosa	8	92	2	19,400,000	306	2	25	5
Ambrosio	3	22	1	260,400	40	1	21	2
Punta Benitez	4	25	2	759,200	27	4	25	2
Lagunillas	13	64	0	29,100,000	72	0	25	2
El Mene	6	29	17	2,500,000	140	45	36	4
La Paz	0	5	0	227,370	28	0	28	3
Concepcion	0	19	0	523,920	64	0	34	3
Total	43	291	22	61,970,890	797	67		

Increased 67½ Per Cent

As seen from the foregoing table, the 1927 output was approximately 62,000,000 bbls., or about 67½ per cent over the 37,000,000 bbls. produced in 1926. To obtain this increase in new production amounting to about 25,000,000 bbls., plus making up for the declines in the pre-1927 wells, required the drilling of some 313 wells. On the face of things, the figures indicate a very satisfactory first year return of about 100,000 bbls. per well. The true situation is, however, not portrayed by these figures, as many of the new wells have been shut in except for brief initial production tests, and three of the fields, Ambrosio, La Paz and Concepcion, were completely closed in during the greater part of the year. Actually the average Venezuelan well drilled during 1927 could do much better than 100,000 bbls. in its first year of life.

The companies controlling Venezuela's production are few in number. The Royal Dutch through its subsidiaries, the Caribbean Petroleum Co., and the Venezuelan Oil Concessions, Ltd, and through purchasing contracts with British Controlled Oilfields, Ltd., owned or controlled some 33,000,000 bbls., or about 53 per cent of the 1927 total. The Lago Petroleum Corp., a subsidiary of the Pan American, accounted for approximately 15,000,000 bbls., or 24 per cent, and the Gulf Oil Corp., in affiliation with the Creole Syndicate and Venezuelan Petroleum Corp., produced about 14,000,000 bbls., or 23 per cent.

The big three, Royal Dutch, Lago, and Gulf, do not own 100 per cent of all of this production just credited to them above, but as they are at present the sole owners of the transportation facilities, the control of the oil either through actual production or purchase is consolidated in these three companies. Thus, though they dominate the situation, there are also extensive minority interests and several small independent companies deriving substantial benefits from the production.

Minority Interests

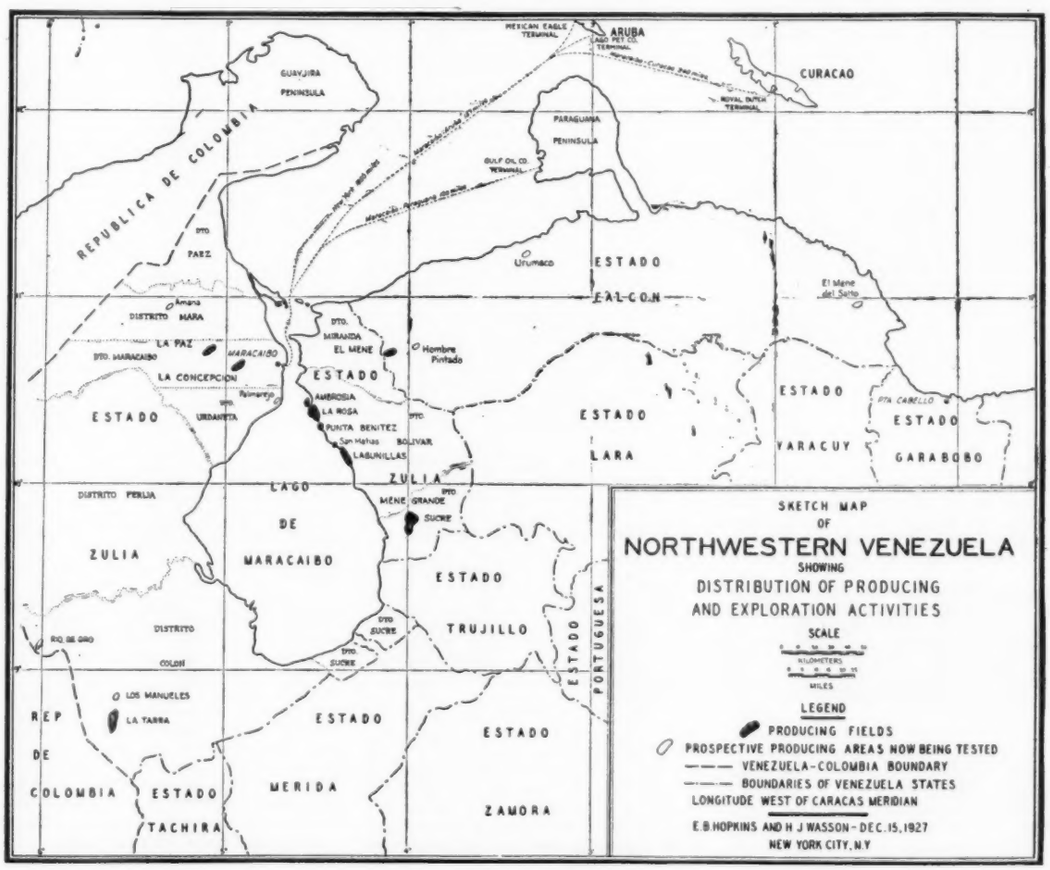
In the first place, the Venezuelan government receives the cash equivalent of several million barrels of royalty oil which constitute its share of the output.

The British Controlled Oilfields, Ltd., an independent English company operating the El Mene Field, obtained from this field a production which averaged over 6,500 bbls. a day during the year. This oil is sold to the Royal Dutch under contract as above mentioned.

The General Asphalt Co. obtains a production of about 1,800 bbls. a day of heavy oil from its own concession in eastern Venezuela, and a somewhat larger amount of royalty oil from operations of the Royal Dutch in the Mene Grande Field. These royalties came about as a result of the original pioneer exploration of the country in which venture the asphalt company and Royal Dutch were partners.

A large amount of the Gulf company's production is obtained from concessions, originally obtained by Creole Syndicate, and the Venezuelan Petroleum Co. As a result of working agreements, and royalty interests, these two companies, Creole and Venezuelan Petroleum, receive a substantial participation in the Gulf company production. The participation of the American companies has rapidly become of more and more importance during the last few years. Whereas in 1922 all the production was controlled by Royal Dutch, the division is now about 53 per

(Continued on Page 94)



Greater Difficulty in Mexican Field

Costs of Operation Increased by Additional Drilling and Exploration While Production Declines

Specially Contributed

During the course of the present year, according to the Petroleum Bureau of the Mexican government, up to November 10, inclusive, there have been granted 726 drilling permits, of which 83 were granted during January, 62 during February, 89 during March, 50 in April, 94 in May, 54 in June, 74 in July, 77 in August, 66 in September, 58 in October, and 19 during the first 10 days of November. Some of the drilling permits recently granted may be considered for exploration wells since they will be drilled in new fields some distance from proven territory.

In the southern part of the State of Tamaulipas will be begun two important wells, one at Las Flores, about 6 kilometers from the station Manuel of the Tampico to Monterrey Railway, and the other at Tancasneque, about 10 kilometers north of the Tamesi River. Both of these regions have been considered for several years as probably containing the extension of petroleum strata.

There will be awaited with much interest the drilling of a well in the municipality of Martinez de la Torre, State of Vera Cruz, since there has been no drilling up to the present in that vicinity. The well will be called No. 1 El Pital and will be drilled by the Diaz Nautla Oil Co. and will be located 50 kilometers south of the Fubero Field near the Martinez de la Torre River.

To Drill on Isthmus

On the Isthmus of Tehuantepec a well will be drilled on the west bank of the Uzpanapa River at San Jose del Carmen, about 10 kilometers northeast of the proven field of Tecuanapa. The National Petroleum Control Administration has begun to drill in Ochon about 1,600 meters east of Salinas. No indications of oil have been found in the wells which are being drilled in the northern part of the State of Coahuila.

Much has been said of the fact that the Aguila Co. will soon begin work at San Marcos, north of the old Tanguijo Field near the Laguna de Tamiahua.

Between October 11 and November 10, 1927, a number of wells were finished, but only two were producers. One of these was of considerable capacity, namely Paso Real 7 of the Penn-Mexican Fuel Co. in the Hacienda de Paso Real, south of the Tuxpan River, which was brought in October 15, at 695 meters depth, with an initial daily production of 7,000 bbls. Its capacity increased rapidly, and on being tested showed a production of 26,500 bbls. daily. It is believed this capacity will be surpassed considerably when tubing of small diameter, which was used during the test, is replaced by tubing of greater diameter. This well is a prolongation to the southeast of the "Golden Belt," and about 200 meters from No. 6, which was brought in 20 days before.

The productive capacity of this last well increased recently until it reached an average of 12,000 bbls. daily. The importance of these wells is in the fact that the company proposes the drilling of other wells continuing toward the southeast.

The wells brought in between January 1 and November 1, inclusive, total 191, with a maximum productive capacity combined of 381,947 bbls. daily. These wells are distributed by fields as follows:

Mexican Wells Brought In Between January 1 and November 10, 1927

Zones—	No. of wells	Initial daily prod. bbls.	Aver. daily prod. per well bbls.
Camargo (Dto. N. de Tamaulipas)	1	.....	.....
Dto Sur de Tamaulipas	1	472	118
Ebano	42	107,056	2,610
El Limon	1	786	195
Cacalilao (Panuco)	32	32,243	1,006
Panuco (Diversos)	43	123,573	2,874
Topila	17	1,465	88
San Jeronimo	1	25	25
Dos Bocas	1	8,995	8,995
Tepetate-Amatlan	4	667	164
Toteco	1	94	94
Cerro Viejo	2	11,429	5,718
Tierra Blanca	10	38,941	3,894
Jardin-Paso Real	4	35,194	8,775
San Isidro	1	4,994	4,994
Teapa (Istmo)	2	19	12
Filisola	21	16,084	767
Belem (Tabasco)	1	Gas	Gas
Total	191	381,947	1,937

Of the wells noted above, 22 were brought in in January, 20 in February, 31 in March, 33 in April, 25 in May, 20 in June, 13 in July 9 in August, 12 in September, and 6 in October.

Petroleum production declined further during the month of September, as will be seen from the following table:

Mexican Petroleum Production During the First Nine Months of August

Months—	Barrels	Value in Mexican pesos
January	6,075,706	14,916,073
February	5,425,905	13,315,662
March	5,706,376	13,931,335
April	5,524,954	13,447,155
May	5,829,673	14,170,950
June	5,320,680	12,998,043
July	5,488,421	13,451,210
August	5,392,882	13,243,500
September	4,774,431	11,772,840
Totals	49,539,029	121,246,769

The total production of petroleum in Mexican fields since 1901 up to September, 1927, amounts to 230,588,288 cubic meters (1,458,466,326 bbls.), with a commercial value of 2,591,171,349 pesos.

The amount of petroleum products exported from Mexico during the month of October was less than the amount of exports for the preceding month, as will be seen by the table given below.

Mexican Crude Petroleum and Derivatives Exported During the First Ten Months of the Year 1927

Months—	Barrels
January	4,512,490
February	4,321,073
March	3,869,224
April	4,743,956
May	4,884,260
June	4,679,798
July	4,547,739
August	4,197,090
September	3,866,695
October	2,767,782
Total	42,390,107

To the table of exports during October, which refers only to Mexican oil and its products, it is necessary to add 619,263 bbls. derived from foreign petroleum treated in Mexican refineries. Of this latter kind of products, Mexico has exported during the first 10 months of 1927 a total of 3,942,428 bbls.

Quotations Unchanged

There has been no change in the quotation of Mexican petroleum, as it remains at 14.47 pesos per cubic meter ($1.15 per barrel) for crude petroleum, f.o.b. Tampico, not including taxes. Light crude was quoted at 16.98 pesos ($1.35 per barrel).

Causes of Decline

In addition to the increasing frequence with which salt water is being met with in the Mexican producing areas another conspicuous cause of decline has been the refusal of the Mexican government to grant drilling permits to American companies which did not change their properties for "concessions" before December, 1926, as required by the petroleum law of 1925. No new permits have been granted to American or other foreign-owned producing companies which did not make this change, and attempts to drill without permits have been stopped. Naturally, the refusal of permits to a group of companies representing approximately 75 per cent of the oil output of the country has prevented the bringing in of a sufficient new production to make up for a natural exhaustion.

All but two of the major operating companies showed loss in production in 1926, the latest period for which figures are available, one of the exceptions being the National Railways, which increased its output from 2,307,908 bbls. in 1925 to 4,232,470 bbls. in 1926. Only one company could be reasonably considered to have an opportunity to increase its output during 1927, while two of the important companies, after several years in Mexico, have given formal notice of complete cessation of operations.

Peak production for Mexico was reached in 1921 with 193,397,587 bbls. This amount represented a rapid growth for 20 years, from an output of only 10,345 bbls. in 1901. It reached 1,000,000 bbls. in 1907, passed 25,000,000 bbls. in 1913, 55,000,000 bbls. in 1917, and 150,000,000 bbls. in 1920. The decline, while distinct, has been much more gradual. The 1926 output was still above that for 1919, making five years of decline exhibit less change than two of increase. The loss to the petroleum industry is accompanied, of course, by conspicuous losses to the Mexican government, both direct and indirect. The direct loss is largely in the revenue. Mexican taxes on petroleum production totaled $10,136,935 during the first eight months of 1927, and export taxes came to $4,261,760 during the same period. In addition, a tax of $178,908 was levied on crude petroleum imported from foreign sources to be refined in Mexico. In 1921 taxes on petroleum production totaled $43,000,000, from which they declined to $18,000,000 in 1926.

Present Situation

While a recent decision of the Mexican Supreme Court with respect to drilling permits would tend to intimate a prospective alleviation of the difficulties attendant upon obtaining drilling permits, it is still too early to attempt to forecast the possible effect on oil production. Sufficient to say that a critical period has been reached in the economic and industrial life of Mexico.

At the end of 1924 the decreasing production which seriously embarrassed many of the larger companies was accompanied by improvements in equipment which reduced expenses of operation, and consequently some of the companies found that their profits did not suffer from the smaller output. With the continuation of the decline, however, these compensations are losing their value, since the maintenance of a sufficient source of supply of crude is the foundation of the industry, and improvements in drilling processes, refineries, and transportation represent no economy if there is a shortage of raw material.

As matters now stand, the costs of operation are materially increased, not only by additional drilling and more extensive exploring but also by the greater difficulty of obtaining petroleum from less prolific or partially exhausted wells. Much greater expenditure is necessary therefore, for approximately the same result as that obtained in earlier years.

CONSERVATION BOARDS INVITED TO MEET AT TAMPICO, MEXICO

SHREVEPORT, La., Dec. 24.—The Mexican Government will, in a way, be host to the Association of Petroleum Conservation Bureaus if the organization formed at Tulsa during the recent International Petroleum Exposition, accepts the invitation of its secretary, Manuel J. Zevara, to hold its next meeting at Tampico. Senor Zevada is supervisor of the Mexican Petroleum Conservation Agencies and was one of those most active in the organization of the association. He has written W. F. Chisholm, supervisor of the Minerals Division of the Louisiana Department of Conservation, president of the association, extending the invitation and Mr. Chisholm is sending a copy of his letter to all the members.

So far as known at present, there is but one difficulty in the way of accepting Senior Zevada's invitation, a difficulty common to most of the conservation departments of the oil and gas producing states, and that is that few of them are allowed sufficient funds by their legislatures to permit their supervisors and other members of their staffs making the long trip to Tampico.

Senior Zevada's letter follows:

"At our organization meeting held in Tulsa, Okla., last September, the suggestion was made that the Association of Petroleum Conservation Bureaus should meet in 1928 instead of waiting the next Petroleum Exposition and Congress that will take place in Tulsa in 1929. Another suggestion was that we might choose Canada or Mexico, for our coming meeting.

"I am very much in favor of an annual Conservation Convention because I think that it is very important to know and discuss, in due time, all the conservation methods and regulations that the oil producing countries are now experimenting and trying to enforce, endeavoring to protect their oil resources for the future.

"At the same time, I honestly believe that our association will have great advantages in selecting Mexico for its next convention; and I am very pleased to propose, as secretary of the Association of Petroleum Conservation Bureaus, that we shall meet in Tampico, during the first days of November 1928.

"In my capacity as Supervisor of the Mexican Petroleum Conservation Agencies, I have been duly authorized by the Bureau of Mexico to make this invitation, and I have been assured that our association will receive all kind of facilities for the proposed meeting.

"The important advantages that Tampico offers as a meeting place for our association may be summarized as follows:

"By its favorable geographic situation, Tampico can be reached easily by railroad from all points in the United States; also by steamship from any American port on the Atlantic and the Gulf Coast. The Tampico climate in November is very mild; it compares advantageously with Florida or California during the wintertime. Tampico is the center of the Mexican petroleum industry which occupies the second place in the world's oil production. It has a population of 150,000 inhabitants, and has very good hotels and picturesque surroundings as it is located almost on the confluence of two rivers, the Panuco and the Tamesi, at less than 6 miles from the gulf shore.

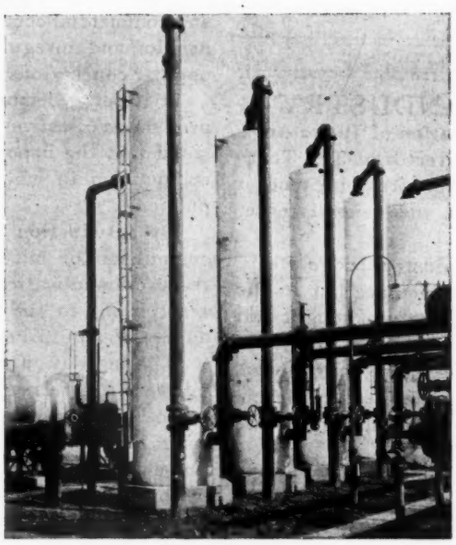
"The conservation regulations of the Mexican petroleum law have been in practice for several years in the Ebano and Panuco oil fields, near Tampico, affording a good opportunity for the study and observation of the results attained by their application.

"The Mexican Bureau of Petroleum has established in Tampico its most important agency, which is charged to enforce

(Continued on Page 245)

Please absorb our good wishes :may all your cares evaporate

In the process of living through 1928 may efficiency and economy guide you to greater profit in every undertaking



Representatives **HURLEY BROS.** *Tulsa, Oklahoma*

Newton Process

MANUFACTURING COMPANY
FULLERTON, CALIFORNIA

The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

Published Weekly by
THE PETROLEUM PUBLISHING COMPANY
114-116 West Second Street
TULSA, OKLA.

Established as an International Publication in 1910 by Patrick C. Boyle

President - - - - - - - - - - - - - - Frank T. Lauinger
Vice President and General Manager - - Robert W. Egan
Secretary-Treasurer - - - - - - - - - - - W. T. Bryan
Editor - - - - - - - - - - - - - - - James McIntyre
News Editor - - - - - - - - - - - - Andrew M. Rowley
Associate Editor - - - - - - - - - - - W. T. Anderson
Refinery Editor - - - - - - - - - - - - C. O. Willson
Technical Editor - - - - - - - Charles K. Francis, Ph.D.
Advertising Manager - - - - - - - - - Clarence Morris
Circulation Manager - - - - - - - - - - J. P Mulkern

DISTRICT ADVERTISING OFFICES
C. L. CAIN - - Room 629, 101 Park Ave., NEW YORK CITY
E. KLAPPENBACH, 1328 Peoples Gas Bldg., CHICAGO, ILL.
ALVIN E. LOEFFLER State Theater Bldg., PITTSBURGH, PA

TERMS OF SUBSCRIPTION
(By Mail, Postage Prepaid)

Single copies - - - - - - - - - - - - -	$ .15	One year (in United States) - - -	$6.00
Three months - - - - - - - - - - - - -	$2.00	One year (in Canada) - - - - -	$7.00
Six months - - - - - - - - - - - - - -	$3.00	One year (foreign countries) - - -	$7.00

ADVERTISING RATES ON APPLICATION
Telephones: 6291-6292-6293
Remittances by Checks, Drafts, Express or Postal Money Orders should be made payable to
The Petroleum Publishing Company
Cable address, "Oilgasnal"

MEMBER AUDIT BUREAU OF CIRCULATIONS

A SUGGESTION TO THE INDUSTRY

The unexpected announcement of the resignation of Judge Amos L. Beaty as Chairman of the Board and as a director of The Texas Corporation, unaccompanied by any explanation from its modest subject, has been the cause of much comment and general regret during the past week.

In his 21 years connection with the oil industry Judge Beaty has risen to a commanding position, not only in place but in the personal esteem of oil men generally. His advice was sought and his counsel heeded. He was noted for his conservatism but it was no more than taking care to be sure he was right before going ahead, and once the decision was made he was the better leader for his habitual caution. His judgment, based on study and thought, came to be universally respected.

The retirement of such a man from active participation in the affairs of the industry would be an incalculable loss but the reports that he has no such intention will be received with hope.

Judge Beaty has excused himself from making any announcement beyond the mere fact of his resignation but it is assumed from his retention of his association with the American Petroleum Institute that he intends to maintain his active interest in the oil business.

The Oil and Gas Journal has no knowledge of his plans but believes his present release from corporate ties offers an exceptional opportunity to the industry to take advantage of it to enlist Judge Beaty as spokesman for the industry in working out the plans recommended by his Committee on Agreements, as reported to and adopted by the directors of the American Petroleum Institute at the Chicago meeting.

His superior qualifications for that labor were recognized when he was chosen chairman of the committee at the meeting in Tulsa and the promptness with which the report of that committee was adopted at Chicago proved his success in framing a program for legislation that could be approved by the industry.

The adoption of that report by the directors of the Institute was, however, only a gesture. It remains to be translated into action and it will, we believe, be agreed that no better leader in such a movement could be desired than Judge Beaty.

He entered the oil business through the legal department of The Texas Company in 1907 and had attained a reputation as a leading authority on legal matters affecting the oil industry before assuming executive responsibilities and has since consistently maintained his interest in legal developments. His rejoinder to the Federal Trade Commission questionnaires was a stinging exposition of constitutional rights. He was among the earliest to discuss the legal difficulties which hampered the industry in co-operating for the conservation of our oil resources, vehemently opposing what he believed to be impractical, but seeking means by which the end might be attained.

That the Committee on Agreements of which he was chairman was able to formulate a program that could be adopted by the directors of the Institute with the approval of the industry showed how carefully that work was done.

This movement within the oil industry to harmonize our legislation with modern conditions by removing the shackles which restrict the operations of great industries even when most beneficial to the public is now spreading to other industries which have felt similarly hampered by obsolete laws.

The approval and even advice which the Government has given to the agricultural industry, to the cotton industry and the coal industry, about keeping supply in line with demand has been taken up by other industries menaced by overproduction under excessive competition. Now that the Federal Oil Conservation Board has pointed out the like necessity in the oil industry and the Federal Trade Commission has verified the effects it was inevitable that other industries should seek similar relief, the sugar industry being the latest.

The enlarging proportion of our population engaged in industrial and commercial occupations where the evil effects of excessive competition and unregulated production can be clearly seen is changing popular conceptions about business practices and industrial methods.

It is being demonstrated that competition carried to excess can produce as disastrous results as monopoly. It is coming to be understood that the happy medium of co-operation in stabilization with competition in efficiency is better for both an industry and the public.

Overproduction through excessive competition under assumed compulsion of out-of-date laws means a double waste, waste of resources and waste of energy, beggaring the producer without any real benefit to the consumer who must sooner or later feel the effects of diminished supply thus sacrificed.

The legislation, state and federal, proposed by the Beaty Committee on Agreements, is so simply stated that anyone can understand its purpose and effect. The public, we believe, is being educated by experience to understand the necessity for adjusting our horse-and-buggy-day legislation to meet the conditions of this motorized age. The old time suspicion of business is being removed by fair dealing and full service.

The trade associations and business organizations which bring men in the same line together are promoting better understanding of one another's difficulties. Our antitrust laws were the product of a time when personal businesses and industries were being supplanted by consolidations into larger units needed to cope with immensely increased demand and supply. Today we no longer fear mere size; in fact we realize it is needed to do the world's work.

Nowadays we judge by results, not by fears. The alarm once felt for a steel monopoly now seems absurd. The Gary dinners once regarded with such suspicion are seen to have been constructive rather than destructive in purpose. It is coming to be understood that by allowing co-operation between units in great industries and businesses the public may be better served.

This attitude of the popular mind makes opportune the present effort to secure such legislation as may be necessary to permit co-operation for conservation within the oil industry on the lines suggested by the Beaty Committee.

It would be a work worthy of any man and the industry could well afford to invite Judge Beaty to undertake it. It needs the personal direction of someone who knows the subject thoroughly, who is familiar with the needs of the industry and the laws regarding petroleum development. These qualifications would be ideally met in the person of Amos L. Beaty.

DRESSER

Dresser Couplings are standard equipment for high pressure natural gas lines and also for service lines in the natural gas industry. They work equally well on high and low pressure,—withstand any pressure that the pipe will carry,—take care of all movement due to vibration or expansion and contraction,—and they will remain permanently tight.

for every mile of pipe

from Production

to Consumption

S. R. DRESSER MFG. CO.
BRADFORD, PENNA.

COUPLINGS

Dominate!

Winkler County Center of Attraction

Appearance of Water in Two Wells Not Alarming. Heavy Flush a Feature of the Week. Yates Proration Plans

By C. D. Lockwood
Staff Correspondent, West Texas Fields

FORT WORTH, Tex., Dec. 26.—Water showing in two wells in the Hendricks Field of Winkler County, and not considered alarming, and the heavy flush in that field the past week, were among the salient developments in West Texas during the week.

The Texas Company's No. 1 Grisham-Hunter, Section 41, Block B-5, is reported making 500 bbls., pinched in, 10 per cent water and 40 per cent b.s. The well had been pinched in to around 600 bbls. daily. Later it was opened and made close to 2,000 bbls. and was then pinched again. A few days ago it started making sulphur water and b.s. The well is in the west central part of the field. The discovery well is flowing and pumping around 260 bbls. of good oil daily.

Magnolia Petroleum Co.'s No. 2 Ida Hendrick, SW NE Section 29, about a mile south and a quarter east of The Texas Company's well, is flowing around 2,000 bbls. daily from 2,865 to 2,955 feet, 50 per cent fresh water and b.s. The production is flowing into an earthen pit and the water is believed to be coming from behind the casing.

Neither well's showing has caused alarm among the operators. The wells are not the first to show water and the offsets have not been affected to date. Many expect the Hendricks Field to be spotted.

Week's Completions

Eight new wells were completed in the field during the seven-day period with a total flush of 25,716 bbls. or an average of 3,214 bbls. per well. Some were temporarily completed and will be drilled deeper into the pay at a later date. In comparison to Yates in Pecos County Hendrick had a bigger flush but the average was lower in flush production. Five wells in Yates had a combined initial production of 20,680 bbls., or an average of 4,136 bbls. The total new production in the West Texas area last week was 58,211 bbls.

Despite the 10,000 gain in daily average in Hendrick, West Texas production as a whole showed a decline of 5,717 bbls. last week. This was due to pinching Yates production and the pinching in of production in Crane County. Pinching production in Yates was general while in Crane the Prairie Oil & Gas Co. pinched its production to half of last week's average and brought that county's total down.

It is possible that the Southern Crude Co.'s west offset to the Amerada Petroleum Corp.'s No. 1 J. B. Walton, SW NW Section 48, Block 26, a wildcat testing the Hendricks area to the northeast, will be down before the Amerada test is completed. The tools and several hundred feet of line are hung up at about 400 feet in No. 1 Walton. While an effort was being made to back off the casing to pull tools and casing, a joint was broken above top of tools. A string of left hand thread casing has been ordered and an attempt will be made to break joint just below tools. Southern company's test is drilling below 1,000 feet with rotary tools. Amerada corporation's test is making about 1,000,000 feet of gas at 2,411 feet.

As the week closed in Yates only the five completions served to break the monotony in that field. Gulf Production Co.'s No. 3 Thompson on the Crockett County side of the pool is still flowing clean oil. The will is pinched in to 20 bbls. hourly. The other wells on the Crockett County side are making water and started making water soon after their completion.

Yates Proration Plans

Yates Pool operators are more concerned at present with the new proration plan scheduled to start January 1. Under the old plan the "allowed production" of the field was determined by equitable proration of the field's potential capacity. Potential capacity of each well was determined by taking a one hour gauge and multiplying it by 24. The old plan was objected to because it served to stimulate the rapid drilling of the field.

In lieu of that plan the producers decided at their meeting December 10 to allocate pipe line capacity out of the pool on the basis of proven acreage and such a plan would be kept in force until June 30, 1928. Prorating each producer's production on the basis of his proportionate share of proven acreage would cause drilling to be carried on with the aim of proving up more acreage instead of causing operators to drill up proven locations and thereby increase their "potential" production.

Simms Oil Co., however, did not indicate acceptance of the plan at the last meeting. A few days ago officials of that company submitted a new plan which is reported to be a combination of the old and new plan. According to the report the "potential production" principal is the controlling factor in the Simms company plan.

Under the plan in which the proven acreage is the controlling factor the Simms company's percentage would be 2.6 per cent of the potential production of its lease. Under the old plan where "potential production" was the controlling factor the Simms company was allocated pipe line space for between 9 and 10 per cent of its potential production.

Simms company has production on a small sized lease in the field but the three wells drilled so far are big caliber in production. One of the wells is the second largest gusher in the field. When the proven acreage plan was being discussed the other operators in the field agreed that the Simms company should be allowed 6 per cent of the pipe line space instead of the 2.6 per cent. Simms company, however, asked for 8 per cent of the pipe line space.

W. A. Monterief, chairman of the proration committee, said that another meeting would not be called unless indications from a sufficient number of the other producers indicated a possible acceptance of the Simms company plan. Many of the producers were not inclined to re-open the problem since a 94 per cent agreement has been reached.

Pipe Line Rumors

The rumors that Simms Co. planned to withdraw from the curtailment plan and build a line from the pool north to the Orient Railroad were branded as rumors without foundation by the Simms company.

No verifcation to the report that the Texas Pipe Line Co. plans to build a trunk line system out of the West Texas area to the coast at this time is forthcoming from the officers of the pipe line company. According to street gossip, the pipe line company was to build a line from Winkler County to Port Arthur. That company recently purchased the Pure Oil Co. holdings.

The Texas Pipe Line Co. has started construction work on an 8-inch carrier from Hendrick in Winkler County to McCamey where a loading rack will be built. Construction work on other pipe lines being built in that area is being rushed to completion.

First reports slumped off during the past week partly due to the holiday lull. Scores of the drilling wells shut down for the Christmas holidays are not expected to be started up until after the first of the year. At that time, however, wildcatting is expected to be boosted to some extent by the number of tests planned to be drilled soon after the first of the year.

WILDCAT OPERATIONS IN WEST TEXAS

Week ending December 24, 1927

Company, farm and location—	Remarks—
ANDREWS COUNTY	
George B. Calvin's (was Calvin & Belt's) No. 1 Ratliff & Bedford, C NE Sec. 16, Blk. A-54	Hole full fresh water 1,055 ft.; top salt 1,610 ft.; drlg. 3,880 ft.
J. S. Cosden's No. 1 Ratliff & Bedford, C SE Sec. 8, Blk. 73, Public School Land	Top salt 1,585 ft.; shut down 4,116 ft., contract depth; will deepen.
Deep Rock Oil Co.'s No. 1 W. J. Harris, C SE Sec. 12, Blk. A-46, Public School Land, elev. 3,167 ft.	Hole full fresh water 1,050 ft.; drlg. 1,145 ft.
B. B. McKennon's (was Neff et al's) No. 1 J. S. Means, C SE Sec. 12, Blk. A-35, Public School Land	Set 8-in. 1,385 ft.; drlg. 1,420 ft.
A. G. Carter & Zweifel's No. 1 Cowden, C SE Sec. 18, Blk. A-52, Public School Land Sur., elev. 3,156 ft.	Top salt 1,375 ft.; encountered pocket of air 3,625 ft.; drlg. 4,990 ft.
BORDEN COUNTY	
Marland Oil Co.'s No. 1 G. E. McDavid, C SW Sec. 156 Blk. 25, H. & T. C. Sur.	Total depth 1,330 ft.; mudding off water 1,305-25 ft.
BREWSTER COUNTY	
Cady & Keller's No. 1 Decies	Rig on ground.
Cowden & Bowser's No. 1 Jackson & Harmon	Drlg. 600 ft.
J. M. Hickey's No. 1 Jackson & Harmon, NE cor. Sec. 182, Blk. 9, G. H. & S. A. Sur.	Drlg. 710 ft.
Mid-Kansas O. & G. Co.'s No. 1 Turney, Sec. 77, Blk. 213, T. & St. L. Sur.	Shut down 2,350 ft.
Reese & White's No. 1 Kimbale, C NE Sec. 204, Blk. 9 G. H. & S. A. Sur.	Shut down for underreamer 1,306 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 mi. S of Alpine	Drlg. 1,169 ft.
Wilcox & Anderson's No. 1 Gage, Sec. 8, Blk. 300, T. C. R. R. Sur.	Drlg. 1,901 ft.
COKE COUNTY	
W. H. Brown et al's No. 1 W. L. Foster, SE cor. Sec. 142, Blk. 2, H. & T. C. Sur., elev. 2,222 ft	Shut down 2,250 ft.
Danciger O. & R. Co.'s No. 1 Mrs. Byrnes, Clinton Sur.	Drlg. 3,250 ft.
Lipan Oil Co.'s No. 1 S. M. Conner, Sec. 71, Blk. 2, H. & T. C. Sur.	Show oil 1,224-34 ft.; shut down lime 3,317 ft.
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H. & T. C. Sur., elev. 2,750 ft.	Total depth 2,236 ft.; shut down.
CONCHO COUNTY	
Parks & Lawson's No. 1 Schultz	Show oil 925 ft.; shot with 40 and 30 qts.; no results; drlg. 1,170 ft.
The Exploration Co.'s No. 1 Hartgrove, Blk. 240, J. Schouch Sur. elev. 1,718 ft.	Set 10-in. 760 ft.; clean. out.
CRANE COUNTY	
Crane Dev. Co.'s No. 1 J. R. Mosley, S cor. Sec. 18, Blk. 6, H. & T. C. Sur.	Drlg. 910 ft.
Gulf Prod. Co.'s No. 2 W. N. Waddell, SE cor. NE Sec. 3, Blk. B-25, Public School Land	Drlg. salt 1,545 ft.
J. K. Hughes Dev. Co.'s No. 1 State Bank Commission, CSL Sec. 18, Blk. 4, H. & T. C. Sur.	Location.
Humble O. & R. Co.'s No. 1 University-B	Spudding.
Independent O. & G. Co.'s No. 1 University-B	Spudding.
CROCKETT COUNTY	
George Anderson and Marland Oil Co.'s No. 1 University	Hole full sulphur water 1,800 ft.; ½ baller oil 2,340 ft.; ¼ baller sulphur water per hour 2,475 ft.; shut down 2,631 ft.
V. T. Bolin & Co.'s No. 1 P. C. Coates, NW cor. SW Sec. 4, Blk. 2, I. & G. N. Sur.	Shut down 2,110 ft.

(Continued on Page 197)

WEST TEXAS

Daily Average Production by Leases

Crane County

Company and Lease—	Wells	Prod.
Church et al:		
University	1	105
Church & Weekly:		
University	3	1,604
Church & Fields:		
Duoil-Universal.y	1	147
Eastland Oil & Collett:		
University	8	8,782
Gulf Prod. Co.:		
All leases	65	19,320
Humble Oil & Ref. Co.:		
University	13	6,165
*Independent O. & G. Co.:		
*University-A	5	131
*University-B	1	12
Total Independent	6	143
Landreth Prod. Corp.:		
Cowden-Anderson	16	12,814
Magnolia Pet. Co.:		
University-Hardwicke	11	3,815
University-O'Keefe	12	1,867
State-Lasseter	3	199
Total Magnolia	26	5,861
*Pecos Oil Co.:		
Universi.y	11	4,112
*Prairie O. & G. Co.:		
University	5	58
State-Lasseter	5	6,291
Total Prairie	10	6,354
*Simms & Atlantic:		
University-A	9	4,075
University-B	1	50
..Unversity-C	8	17,884
*University-D	10	4,177
University-E	1	200
Total Simms & Atlantic	29	26,396
Stidham & Thrasher:		
University	1	18
The Texas Company:		
University	1	228
University-Beasley	1	30
Total The Texas Company	2	258
*Tidal Oil Co. et al:		
University-B	2	62
University-C	1	19
University-E	1	85
*University-F	7	4,272
*University-G	2	258
University-H	2	46
University-I	8	5,328
Total Tidal	23	10,027
Total Church & Fields-McEl-Pools	216	102,133

Miscellaneous Crane County

Gulf Prod. Co.:		
Waddell	1	18
Independent J. & G. Co.:		
Hughes	1	6
McMan O. & G. Co.:		
Hughes	2	62
Marland Oil Co.:		
All leases	16	663
The Texas Company:		
King	9	270
Union Land-F	1	6
	30	1,005
Miscellaneous total	30	1,005
Grand total Crane County	246	103,053

Pecos County

Allsman & Bell:		
Pecos River Bed	3	289
California Co.:		
Yates	7	7,149
California Co.:		
Smith	4	1,559
Gulf Prod. Co.:		
All leases		5,892
Humble O. & R. Co.:		
M. A. Smith	5	1,383
M. A. Smith-B	2	1,616
Kirby Pet. Co. & Edson:		
J. H. Tippett	1	91
Marland Oil Co.:		
Yates-A	10	1,474
Maxda & Savoy Oil Co.:		
M. A. Smith	1	122
McMan & Marland:		
Yates	12	4,543

Red Bank Oil Co.:		
Smith	2	36
Simms Oil Co.:		
Smith	3	1,829
Roxana Pet. Corp.:		
Tippett	3	823
Smith	2	109
Mid-Kansas & Transcon inental:		
Yates-A	9	5,029
Yates-B	13	4,618
Yates-C	6	3,812
Yates-D	1	696
Yates-E	1	190
Smith-Taylor	6	3,761
Total Mid-Kansas & Trans...	36	18,106
Texon Oil & Land Co.:		
Yates	2	0
Total Yates Field	93	45,021

Winkler County

Southern Crude Co.:		
T-67 Hendricks-A	1	255
T-67 Hendricks-C	4	2,548
T-67 Hendricks-F	1	1,929
T-88 Hendricks-B	1	5,956
T-89 Grisham-Hunter-A	1	29
2-T-67 Grisham-Hunter	1	Dead
T-88 Hendricks-A	1	1,015
T-88 Hendricks-C No. 2	1	1,375
Total Southern Crude	11	12,178
Gulf Prod. Co.:		
All leases		3,220
Republic Prod. Co.:		
Grisham-Hunter-A	1	4,318
Murchison et al:		
Grisham-Hunter	3	410
Grisham-Hunter-C	1	155
Grisham-Hunter-B	1	314
Total Murchison e. al	5	879
†Cranfill & Reynolds:		
Ida Hendrick	2	5,525
Atlantic Oil Prod. Co.:		
Grisham-Hunter	1	3,015
Ida Hendrick	1	246
Ida Hendrick-D	1	2,800
Total Atlantic	3	6,061
Humble O. & R. Co.:		
Grisham-Hunter-4	1	2,300
*Ida Hendrick-B	2	5,500
Total Humble	3	7,800
*Independent O. & G. Co.:		
Grisham-Hunter	2	2,120
Hendrick	1	0
Ida Hendrick	1	262
Total Independent	4	2,382
Landreth Prod. Corp.:		
Grisham-Hunter	2	5,567
Ida Hendrick-A	2	3,962
Total Landreth	4	9,529
The Texas Company:		
Grisham-Hunter	1	Water
Roxana Pet. Corp.:		
Grisham-Hunter-A	1	1,027
Ida Hendrick-C	1	2,390
Total Roxana	2	3,417
Roxana Corp. et al:		
Scharborough	1	20
Texon Oil & Land Co.:		
Grisham-Hunter-A	1	3,652
Turman et al:		
Ida Hendrick	1	35
Magnolia Pet. Co.:		
Ida Hendrick	2	3,200
Total Winkler County	38	58,994

*Production pinched in. †No. 2 shut in.

Estimated Daily Average Production for West Texas.

West Texas—	Prod.
Big Lake Field	22,880
Crane County	104,953
Crockett County	3,725
Ector County	15
Glasscock County	S.D.
Howard County	6,183
Jones County	1,352
Loving County	75
Mitchell County	3,342
Pecos County	45,021
Runnels County	85
Scurry County	45
Upton County	17,910
Winkler County	62,216
Total West Texas	265,902
Total las. week	271,619
Decline	5,717

WEST TEXAS COMPLETIONS

Crane County

Simms Oil Co.'s and Atlantic Oil Producing Co.'s No. 12 University-D topped the pay at 2,815 feet, bottomed at 2,911 feet; well was shot with 180 quarts from 2,836-2,907 feet and started off with a production of 72 bbls. hourly but settled to a production of 200 bbls. daily. Texas Development Co.'s No. 1 Jax Cowden, found a hole full of sulphur water from 4,294-95 feet and was abandoned.

Crockett County

McManmon Oil Co.'s No. 1 Blakeney was dry and abandoned at 4,050 feet. C. A. Jones and others' No. 1 Powell topped the pay at 2,590 feet and drilled to a total depth of 2,634 feet, 50 quarts being shot from 2,612-34 feet and the well swabbed 85 bbls. the first 24 hours. Gulf Production Co.'s No. 3 G. L. Thompson and others topped the pay in soft lime at 1,042 feet and the well ran wild making 480 bbls. per hour, as it was impossible to get the tools out, the line being cut, leaving 900 feet in the hole; the well was shut in and estimated to be good for 11,520 bbls. It was pinched to 20 bbls. an hour and flowed 592 bbls. in 24 hours.

Howard County

Magnolia Petroleum Co.'s No. 8 Mary Chalk topped the pay at 1,655 feet with an oil showing from 1,632-53 feet and swabbed 15 bbls. before and 30 bbls. after a 40-quart shot. Vitex Oil Co.'s No. 1 H. R. Clay, total depth 1,786 feet steel line measurement, gas sand at 1,630-87 feet, showing of oil from 1,748-86 feet; 120-quart shot was used with anchor from 1,630 to 1,785 feet and tubing run with packer; well flowed 120 bbls. first 48 hours and is now making 48 bbls. daily.

Upton County

Skelly Oil Co.'s No. 1 J. F. Love topped the pay at 2,045 feet and bottomed at 2,080 feet; a 40-quart shot was used from 2,048-70 feet and the hole filled up 600 feet and swabbed 65 bbls. before the shot and 20 bbls afterwards and is showing 9 per cent water.

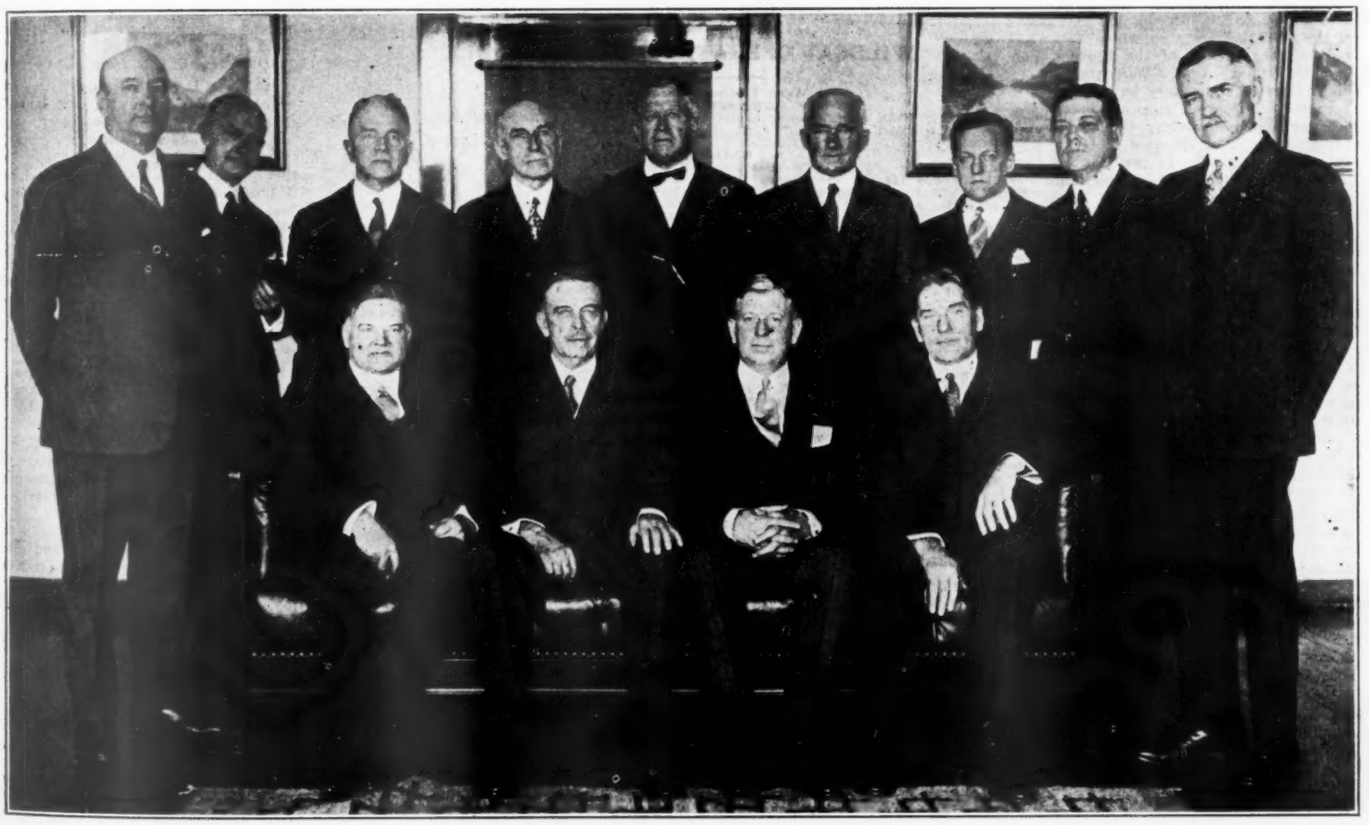
Pecos County

Humble Oil Co.'s No 4 Mrs. M. A. Smith topped the pay at 1,490 feet and drilled to a total depth of 1,675 feet and well flowed 250 bbls. per hour. Humble Oil Co.'s No. 1 J. H. Tippett has the material on the ground but has been temporarily abandoned. Marland Oil Co.'s and McMan Oil Co.'s No. 12 I. G. Yates topped the pay at 1,260 feet and bottomed at 1,344 feet with an initial production of 80 bbls. per hour on open flow. Mid-Kansas Oil Co.'s No. 8 I. G. Yates-A topped the pay at 1,080 feet and bottomed at 1,112 feet with an initial production of 3,995 bbls the first 24 hours through two 4-inch and one 3-inch lines, tested 9 hours the first period and 15 hours the second period. California Co.'s No. 6 I. G. Yates (Lease No. 1) topped the pay at 1,094 feet and reached a total depth of 1,247 feet with an initial production of 130 bbls. per hour. California Co.'s No. 8 I. G. Yaes topped the pay at 1,275 feet and bottomed at 1,311 feet with an initial production of 235 bbls. per hour.

Winkler County

Gulf Production Co.'s No. 5 T. G. Hendricks found the pay from 2,833-80 feet with an initial production of 75 bbls. per hour open flow; the well was pinched in to 677 bbls. per 24 hours and is estimated to be an 1,800-bbl. well. Magnolia Petroleum Co.'s No. 1 Ida Hendricks topped the pay at 2,935 feet, top of first pay was found at 2,713 feet and second pay at 2,830 feet, with an initial production of 3,640 feet and has been temporarily completed. Humble Oil Co.'s No. 3 Ida Hendricks-B topped the pay at 3,018 feet and bottomed at 3,027 feet with an initial production of 2,369 bbls. on a five-eighths-inch choke and the well has been temporarily completed. Landreth Producing Co.'s No. 2 Grisham-Hunter topped the pay at 2,817 feet and was drilled deeper from 2,947 feet to 3,005 feet and made 3,104 bbls. initially. Landreth Production Co.'s No. 4 Ida Hendricks-A topped the pay at 2,930 feet and drilled to a depth of 2,988 feet with an initial production of 4,112 bbls. and has been temporarily completed. Murchison and others' No. 3 Grisham-Hunter-B topped the pay at 2,880 feet and bottomed at 3,050 feet with an initial production of 565 bbls. Republic Production Co.'s No. 1 Grisham-Hunter-A topped the pay at 2,800 feet and bottomed at 2,867 feet with an initial production of 6,010 bbls. and has been temporarily completed. Texon Oil & Land Co.'s No. 1 Grisham-Hunter-A topped the pay at 2,829 feet and bottomed at 2,941 feet with an initial production of 4,115 bbls. and has been temporarily completed.

COMMITTEE OF NINE MEETS WITH FEDERAL OIL CONSERVATION BOARD



The Committee of Nine which, in co-operation with the Federal Oil Conservation Board will consider a legislative program for the preservation of the country's oil resources, photographed in session at the Department of the Interior. Left to right: Seated: Secretary of Commerce Hoover, Secretary of Interior Work, Secretary of War Davis, and Secretary of the Navy Wilbur. Standing: W. S. Farish, James A. Veasey, Henry M. Bates, Assistant Secretary of the Interior Finney, Thomas A. O'Donnell, J. Edgar Pew, Federal Trade Commissioner A. F. Myers, Assistant Secretary of Commerce Brown, and Warren Onley, Jr.

North Texas, Panhandle Discoveries

Oil Found in Several Scattered Areas in Gray County. Wildcat in Southeast Wilbarger County Taps New Sand

By J. H. Dameron
Staff Correspondent, Texas Panhandle

FORT WORTH, Tex., Dec. 26.—Apparent discovery of new producing areas in both North Texas and in the Panhandle were the most noteworthy of the preholiday developments in those areas. Gray County claimed the attention of Panhandle operators and a wildcat in southeast Wilbarger County played Santa Claus for the operators in that county.

While the Gray County test, McCauley and associates' No. 1 Morse, SW cor. Section 2, Block 26, H. & G. N. Survey, is in wildcat territory, oil having been found in the several scattered tests in that general area of central eastern Gray. No. 1 Morse topped the pay in granite wash at 2,510 feet and penetrated it 1 foot. The well started off making 20 bbls. per hour and continued at that rate the first 24 hours. The crude tested 41.4 gravity.

Later reports from the field were to the effect the well was flowing at the rate of 10 bbls. per hour. More than 2,000,000 feet of gas was found at 2,435-50 feet.

The well is on the north side of the North Fork of Red River and has several wells scattered around it making some oil. All, however, are considerable distance away and none have held up notably. Nevertheless, the find has sharpened interest in Gray County.

For several months Gray County has been practically the only big interest in the Panhandle. Gulf Production Co. opened the Gulf-Sanders area which was followed by the opening of the Bowers area by the Delaney well. Wildcats in various sections of the county have since then kept the interest of Panhandle operators focused mostly on Gray County.

No completions were reported in Gray County but several wells in the Bowers pool are in some stage of completion. Several others are nearing the pay. Production in that county showed a slight drop due to the natural decline in old wells with no new production to offset the decline.

Panhandle Completions

Only two completions were reported from the entire Panhandle area and both were in Hutchinson County. Antelope Creek Oil Co.'s No. 2 J. M. Sanford topped the pay at 3,050 feet and bottomed at 3,082 feet. The well is producing 5 bbls. of oil and 100 bbls. of salt water on gas lift. Prairie Oil & Gas Co.'s No. 1 Burnett (Clark) was shot with 155 quarts at 2,965 to 3,051 feet and is making 75 bbls. daily.

In the Sanford area George Williams and associates' No. 1 Sanford, CWL Section 80, Block 46, H. & T. C. R. R. Survey, appears as a good well. The lime formation at 2,758 to 2,833 feet was shot with 90 quarts and the well responded at the rate of 50 bbls. per hour until it bridged two hours later. Prior to the shot the well was making 20 bbls. per hour from 2,750 to 2,858 feet. The hole is being cleaned out.

Skyrocket Oil Co.'s No. 1 Jameson, Antonio Dubio Survey, Hutchinson County, is making operators in that section more optimistic. The well topped the pay at 3,147 feet and 150 feet of oil rose in the hole before the hole started caving. Last reports from the field were to the effect the hole was being cleaned out, 1 foot off the bottom and 800 feet of oil in the hole. When the hole is cleaned it will be deepened.

The Texas Company's No. 2 Gardner, approximately 2 miles west of the Roxana Pool in Carson County, caught fire when 25,000,000 feet of gas was encountered at 2,300-25 feet. The rig burned but no one was injured. The fire was shot out a few hours later and the rig is being rebuilt.

Nothing exciting was reported from the rank wildcat areas. However, Phillips Petroleum Co.'s and Prairie Oil & Gas Co.'s No. 1 Price & Fuqua in Sherman County picked up 400 feet of water at 3,353 feet. The test made 2,500,000 feet of gas at 3,325-33 feet.

New Locations

Only three new locations were reported at the close of the week and all were in Gray County and were as follows: St. Clair Oil Co.'s No. 1 L. S. Stockton, 330 feet each way from the SE cor. Section 35, W. R. Lee Survey. Ray & Massie's No. 1 A. Chapman, 990 feet from the west line and 330 feet from the north line, SW cor. Section 51, Block 25, H. & G. N. Survey. Smallwood and associates' No. 1 W. H. Taylor, 1,200 feet from the north line and 1,300 feet from the east line NE cor. Section 10, Block 2-B, H. & G. N. Survey.

Wichita Falls District

It is believed that Staley & Wynne's No. 1 Waggoner, Section 9, Block 5, H. & T. C. Survey, in southeast Wilbarger County, has tapped a new sand that gives promise of opening a new pool. The test had oil sand at 2,434-35 feet and 200 feet of oil rose in the hole in two hours. The oil continued to rise until 600 feet stood in the hole. About 150 feet of the hole is open and some water was encountered in the open hole. Pipe is to be underreamed and a test made.

Gulf Production Co. defined the Fluhman Pool on the south when No. 1 Fluhman, W. A. McKinney Survey, missed the 1,490-foot sand and the 1,870-foot pay. The hole is being carried on down in an effort to pick up the 2,100-foot pay.

Wilbarger is the most active county in North Texas due to the active wildcatting over the southeast part of Wilbarger County and the activity at Rock Crossing.

Production declined both in the Panhandle and Wichita Falls district to a total of 788 bbls. in daily average. Cold weather is continuing to hold Hutchinson County production down although it showed a slight gain last week. The decline in North Texas was general although Jack County reached a new high for that county.

Production by counties in both districts follows:

Estimated Daily Average Production North Texas and Panhandle

North Texas—	Prod.
Archer County	21,328
Baylor County	76
Clay County	538
Cooke County	4,660
Jack County	1,662
Montague County	9,504
Throckmorton County	1,120
Wichita County	27,503
Wilbarger County	10,103
Young County	11,660
Total North Texas	88,154
Total last week	88,682
Decrease	528
Ranger District—	Prod.
Brown County	17,503
Callahan County	4,115
Coleman County	1,221
Comanche County	1,440
Palo Pinto County	444
Ranger	8,272
Shackelford County	5,101
Stephens County	7,881
Total Ranger district	45,981
Total last week	47,021
Decline	1,021
Panhandle—	Prod.
Carson County	7,720
Gray County	18,980
Hutchinson County	54,920
Moore County	Off
Potter County	30
Wheeler County	1,300
Total Panhandle	82,950
Total last week	83,210
Decrease	260

WILDCAT OPERATIONS IN PANHANDLE

Week Ending December 24, 1927

Company, Well, Farm, Name, Section and Block—	Remarks—
ARMSTRONG COUNTY	
United Oil & Trust Co.'s No. 1 J. P. Reck, Sec. 162, Blk. 4, H. & G. N. Sur.	Fish. for bit, 2,260 ft.
BAILEY COUNTY	
Gibson Oil Co. et al's No. 1 Webb Miller, NE cor. Sec. 15, League 186, Swisher County school land	Rig.
Humble O. & R. Co.'s No. 1 W. H. Fuqua, C E ½, Sec. 117, Blk. A, Melvin, Blum & Blum Sur.	U.R. 8-in., 2,200 ft.
BRISCOE COUNTY	
C. S. Rice's No. 1 J. C. Anderson, SE cor. NW NW, Sec. 22, Blk. B-3, B. S. & F. Sur.	S.D., 1,620 ft.
CARSON COUNTY	
Amatex Dev. Co.'s No. 1 E. S. Polling, Sec. 22, Blk. 2-Y.	T.A., 2,110 ft.
Marston Oil Co.'s No. 1 J. L. Noel	S.D., 3,064 ft.
Navajo Oil Co.'s No. 1 E. S. Polling, Sec. 22, Blk. 2-Y.	Set. 6-in., 2,496 ft; S.D., 2,712 ft.
The Texas Company's No. 2 C. R. Garner	25,000,000 ft. gas, 2,300-25 ft; rig burned.
The Texas Company's No. 1 Chas. Kalka	First gas, 2,300 ft.
Willis et al's No. 1 Burnett est., C SE SW NW, Sec. 111, Blk. 5	T.D., 3,050 ft; C.O.; show oil, 3,-010 ft; show wtr., 3,040 ft; in lime.
CASTRO COUNTY	
Colorado O. & R. Co.'s No. 1 M. Slemmons, SW cor. Sec. 78, Blk. M-17, B. S. & F. Sur.	Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S. K. & K. Sur.	S.D., 510 ft. for casing.
CHILDRESS COUNTY	
Hoover & Calloway's No. 1 O. L. Tucker, Sec. 736, Hag-gard Sur.	Spudded and S.D.
C. L. Sloane et al's No. 1 B. P. Smith, Sur. 49, F. P. Knott lands	Set 6-in. pipe, 2,902 ft; S.D., 3,-600 ft.
COTTLE COUNTY	
Exploration Co.'s No. 1 Richards	Spudded and S.D.
DALLAM COUNTY	
Wood Bros. et al's No. 1 Capitol Synd., Sec. 19, Blk. 17.	Hole full wtr., 4,007-4,127 ft; T.D., 4,183 ft; S.D. until spring.
Marland Oil Co.'s No. 1 A. M. James, C SW W ½, Sec. 21, S. H. McElreath Sur.	S.D., 2,445 ft. for wtr.
Marland Oil Co. et al's No. 1 Capitol Synd., Sec. 36, Blk. 18, Capitol Synd. land	U.R. 6-in., 3,460 ft.
DONLEY COUNTY	
A. T. Drlg. Co.'s No. 1 F. E. Harrington, Sec. 39, Blk. 3-C	1,200 ft. wtr., 3,115-22 ft; show gas, 3,140-60 ft; dry G.W., 3,-260-93 ft; S.D., 3,498 ft.
FLOYD COUNTY	
Expltn. Co.'s No. 1 S. H. Boone, C. C. H. Johnson Sur.	Spudded and S.D.
Expltn. Co.'s No. 1 Land & Cattle Co.	S.D., 780 ft. for orders.
Hoffer Oil Corp.'s No. 1 Nelson	Spudded and S.D.
GRAY COUNTY	
Archer Blake's No. 1 Turneaux, SW cor. Sec. 111, Blk. B-2	S.D., 255 ft.
Bay Shore Oil Co.'s No. 1 C. W. Bradford, Sec. 143, Blk. 2-B	T.D., 2,666 ft; S.L.M. shot with 10 qts. to loosen bit and 8-in collapsed; fishing.
Camel Oil Co.'s No. 1 B. E. McKinney	Rig.
Cole O. & G. Co.'s (was Magdalene Oil Co.'s) No. 1 J. E. Williams, Sec. 17, Blk. 1	S.D., 3,860 ft.
Danciger O. & R. Co.'s No. 4 W. Jackson	Flowed 225 bbl. first 24 hrs. at 2,890-95 ft; drlg., G.W., 3,024 ft.
Danciger O. & R. Co.'s No. 5 W. Jackson	Drlg., 2,055 ft.

(Continued on Page 197)

WICHITA FALLS DISTRICT COMPLETIONS

Archer County

Consolidated Oil Co. and Simms Oil Co.'s No. 4 Turbeville, dry and abandoned at 1,515 feet. Koll-Tex. Oil Co.'s No. 7 White, 18 bbls. at 1,446-48 feet, total depth 1,450 feet. Shappell Oil Co.'s No. 15 Wilson-B, dry and abandoned at 942 feet. Atlantic Oil Co. and Hines' No. 1 Neal, dry and abandoned at 1,253 feet. Burns and The Texas Company's No. 1 Burns-B, initial production 45 bbls. oil and 5 bbls. water at 1,499-1,513 feet. Gray County Oil & Gas Co.'s No. 1 Estell, dry and abandoned at 1,604 feet. Madden & Hunt's No. 1 Hansley, dry and abandoned at 1,141 feet. Panhandle Oil Co. and Burton's No. 3 Farmer-B, initial production 48 bbls. at 1,505½-13 feet.

Foard County

Fain McGahan and others' No. 1 Mathews, recompleted gas well, total depth 2,550 feet, plugged back to 1,506 feet to produce but could not bring back, junked hole and was plugging and shot 12½-inch casing to pull when well started making 1,000,000 feet of gas from 855-60 feet.

Haskell County

Emiston & Critton's No. 1 Reynolds, dry and abandoned at 2,503 feet.

Jack County

Shaw & Rathke's No. 5 Cullers and others, total depth 2,003 feet, production 70 bbls. oil and 25 bbls. salt water, plugged back to 1,991-97 feet.

Montague County

Archer Drilling Co.'s No. 1 Fortune, dry and abandoned at 1,800 feet. Bridwell & Heydrick's No. 1 Salmon and others' dry and abandoned at 1,806 feet. Consolidated Oil Co.'s No. 2 Edmundson, dry and abandoned at 1,984 feet.

Wichita County

H. G. Lewis' No. 1 W. E. Chilson, dry and abandoned at 200 feet. Petroleum Producing Co.'s No. 10 S. M. A. Love-B, dry and abandoned at 520 feet. The Texas Company's No. 338 W. T. Waggoner, junked hole at 2,177 feet. Vergate Oil Co.'s No. 1 Deep Watkins, pumping 110 bbls. oil, no water, from 1,777-79½ feet.

Wilbarger County

Petroleum Producing Co.'s and others' No. 1 Waggoner-A, initial production 172 bbls. from 2,396-2,404½ feet. Phillips Petroleum Co.'s No. 22 Waggoner Q. Q., initial production 35 bbls. from 1,894-97 feet, total depth 1,918 feet. Smith & Brady's No. 1 Waggoner, initial production 69 bbls. from 2,314-29 feet, recompleted.

Young County

Christie Oil Co.'s No. 2 Carter, dry and abandoned at 1,212 feet. Clark and others' No. 2 Howell, dry and abandoned at 883 feet. Roberts Oil Corp.'s No. 1 Stewart, dry and abandoned at 903 feet. Conner and others' No. 10 McCluskey shot with 100 quarts from 4,194-4,262 feet, flowing 350 bbls. Jacob Oil & Gas Co.'s No. 1 Weldon, dry and abandoned at 4,548 feet. Nash & Windfohr's

(Continued on Page 233)

DUNN TOOLAGRAM

Speed! Safety! Simplicity! Strength!

~characteristics of
DUNN TOOLS

Dunn Safety Rotary Tongs and Elevators

A single added degree of safety or speed in drilling operations takes years of thought and development, but it is worth millions to oil companies and their men.
In Dunn Safety Rotary Tongs and "Rotary Flyer" Elevators, safety and speed are built-in features perfected to a point where they are automatic.

DUNN
MANUFACTURING COMPANY
OXNARD, CALIFORNIA

Mid-Continent Branch Warehouse
215 East Archer St. Tulsa, Oklahoma

Export Sales Office
150 Broadway, New York City

OIL WELL DUNN TOOLS
TRADE MARK REG.

DUNN SUPER-SAFETY

DUNN SAFETY ROTARY ELEVATOR

COUNTER-BALANCE LINE WHEN AUTOMATIC CAT-HEAD IS USED

LINE TO CAT-HEAD

DUNN SAFETY ROTARY TONGS

DEAD LINE

DUNN SAFETY *means* DONE SAFELY

Slight Change in Oklahoma Situation

Seminole Field Showed Further Declines During Week. Rapid Drop in Earlsboro Expected in Near Future

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The last week of 1927 witnessed a slowing up of work in the Oklahoma fields, with slight change in the basic crude situation. The temporary flurry caused by the offering of a few premiums 10 days ago has subsided, and while there is an active demand for the better gravities of crude the Oklahoma-Kansas territory is still putting 115,000 bbls. of oil into storage daily, this amount apparently being the excessive production.

The advent of the new year is hailed with relief, as it is thought that many purchasers of oil who have limited stocks will display greater interest in the crude in anticipation of their 1928 requirements.

The Seminole Field, still the crux of the Mid-Continent situation, registered further declines last week, touching 361,000 bbls. on one day. The decline was assisted by a fire at Earlsboro which accounted for 4,000 bbls of the drop, and the compressors on two leases at Bowlegs going socialistic which represented another drop of 1,500 bbls.

The Earlsboro Pool still has a large amount of flush production which should be subjected to a rapid drop of around 40,000 bbls. at some time within the near future.

The remaining fields of the state were very quiet as field workers and officials took full advantage of the holiday season for a rest.

Carter County

Magnolia Petroleum Co. made location for No. 1 Cudd, SW cor. NW, Section 23-1s-3w. Location was made for No. 3 Ratliff, NE cor. NW SW, Section 29-1s-3w. The rig is being built for No. 2 Hefner, SW cor. NE SW, Section 33-1s-3w. The rig material is on the ground for No. 2 Choens, NE cor. SE SW, Section 33-1s-3w. Location for No. 2 Johnson, SW cor. NW, Section 33-1s-3w, was made.

Magnolia Petroleum Co.'s No. 2 C. Ratliff, SE cor. SW NW, Section 29-1s-3w, produced 161 bbls. from sand at 2,803-17 feet, total depth 3,100 feet. No 1 Choens, SE cor. NE SW, Section 33-1s-3w, was completed for 284 bbls. in sands at 3,665-3,710 feet, total depth 3,810 feet. Roxana Petroleum Corp.'s No. 1 Frazier, SW cor. NE, Section 2-5s-3w, has been abandoned at 3,445 feet.

Cotton County

Howe & Leeper's No. 2 Lindset, NW cor. SE SW, Section 27-1s-10w, is making 30 bbls. from sand at 2,164-85 feet.

Creek County

C. G. Tibbens has a machine at the location for No. 3 Fobes, SW cor. SE SW, Section 20-15-9. Henry & Avers' machine is at the location for No. 2 Harris, SE cor. SW SE, Section 12-17-10 Kennedy & Horner's No. 2 Strip, SE cor. SW SW, Section 24-18-11, is drilling at 2,115 feet, being deepened from the old depth of 1,832 feet. Roxana Petroleum Corp.'s No. 4 Sewell, NE cor. NW NE, Section 18-19-9, is a rig up. Gibson & Becker and others made location for No. 3 M. Tiger, NW cor. SW, Section 17-17-7, Drumright Field. Shaffer Oil & Refining Co. is rigging up a machine to deepen No. 4 L. Tiger, SW cor. NW, Section 17-17-7. Gray Oil Co.'s No. 1-A Beaver, NW cor. SE SW, Section 20-15-8, is drilling deeper at 3,318 feet.

Independent Oil & Gas Co.'s No. 4 Wolfe, NE cor. SW NE, Section 18-14 10, Hall-Donnelly Pool, was completed for 650 bbls. in the Wilcox sand at 3,421-44 feet. Murta & Cole's No. 1 Froe, NE cor. SW, Section 35-16-10, is dry and abandoned in the Wilcox sand at 3,028-34 feet. Stover and others' No. 2 Hay, C SW NW, Section 10-17-10, made 100 bbls. from Dutcher sand at 2,561-70 feet. Twin State Oil Co.'s No. 1 Barnett, NW cor. NE NW, Section 15-15-8, has been shut in for 9,250,000 feet of gas in sand at 3,204-14 feet.

Garvin County

Magnolia Petroleum Co.'s No. 1 Ringer, NE cor. Section 15-1-3w, is drilling at 2,050 feet.

Grady County

J. J. Hall made location for No. 1 Woods, SW cor. Section 1-4-8w. Wirt Franklin's No. 1 Burkes, SE cor. NE SE, Section 17-3-5w, is rigging up rotary tools.

Oklahoma Gas Utilities' No. 7 Farwell, NW cor. SW, Section 26-5-8w, has been completed for 35,000,000 feet of gas in sand at 2,019-2,400 feet. Noble & Westerfelt's No. 4 McCaughtry, NW cor. NE NW, Section 35-5 8w, set the 6-inch casing at 2,040 feet, drilled to 2,400 feet and made 26,000,000 feet of gas. Carter Oil Co.'s No. 1 Ray Horton, SW cor. SE NW, Section 8-3-5w, swabbed 107 bbls. from sand at 2,773-92 feet. Hamon & Cox's No. 4 Smith, NW cor. SW NW, Section 16-3-5w, Carter-Knox Pool, is swabbing 170 bbls. from sand at 2,296-2,306 feet.

Kay County

Four Leaf Gas Co.'s No. 1 Parker, SW cor. NE SW, Section 28-29-1, is spudding to drill for shallow gas. Dewey & Hoeffer's No. 2 School Land No. 76, SW cor. SE NW, Section 36-28-1w, is a machine rigging up. Ingram & Wilson are rigging up a spudder for No. 1 Benson, C SW SW, Section 32-28-1. The Prairie Oil & Gas Co. made location for No. 1 School Land, SE cor. SW NW, Section 36-28-1w. Location has been made for No. 2 Hargrave, C SW NE, Section 19-27-1w. Boucher and others have rig material on the ground for No. 1 Cooper, SE cor. Section 23-27-2w. Comar Oil Co.'s No. 1 Jennings, NW cor. SE, Section 19-27-1w, is rigging up to deepen from 3,819½ feet.

Greer and others' No. 1 Koehler, C SE NE, Section 30-28-1, is dry and abandoned at 1,090 feet. Harold Petroleum Co.'s No. 6 Case, CEL W half SE SW, Section 4-27-1w, is making 200 bbls. from sand at 3,416-24 feet. Barnsdall Oil Co. and Margay Oil Co.'s No. 1 Kirwan, NW cor. Section 2-25-2w, has been completed for 1,500,000 feet of gas in sand at 1,15[illegible] feet which is also the total depth.

Mayes County

Arrowwood and others' No. 2 G. Fewel, CWL SW SW, Section 7-19-17, was completed for 1,400,000 feet of gas in sand at 460 66 feet.

Muskogee County

J. M Foltz has a machine at the location for No. 1-A Woodall, SE cor. SW NW, Section 20-15-16. Holt & Ivy's No. 1 Cherry, NE cor. SW NW, Section 2-14-18, is rigging up.

C. B. Crittenden's No. 1 Crittenden, NE cor. NW NE, Section 6-14-19, has been abandoned at 655 feet.

Okmulgee County

T. D. Young & Garrett's rig is up for No. 1 Snoddy, SE cor. SW SW, Section 21-14-11. Jolly & Ogg's rig is up for No. 1 Crawford, SW cor. NW SW, Section 12-13-11. Devonian Oil Co.'s No. 1 Jones, SE cor. NW, Section 6-15-13, is rigging up. Noble Oil & Gas Co.'s No. 2 Fisher, NE cor. SW, Section 6-15-13, is spudding. J. H. Rebold Oil & Gas Co.'s No. 1 Brooks, SW cor. NE, Section 6-15-13, is drilling at 200 feet. J. L. Powell's No. 1 Deer, NE cor. SE NE, Section 20-14-15, is rigging up. J. Aggas and others' No. 2 Smith, NW cor. NE NW NE, Section 20-12-14, is spudding.

Sheedy & McBrayer's No. 1 M. Smith, SW cor. SE, Section 9-15-14, has been completed for 1,000,000 feet of gas from sand at 1,902-23 feet. M. T. C. Oil Co.'s No. 1 Cooper, SE cor. SW Section 25-16-13, is making 10,000,000 feet of gas from the Dutcher sand at 1,623-30 feet. McCulloch Oil Co.'s No. 2 Stanley, NE cor. NW SE, Section 29-16-13, is dry and abandoned in the Dutcher sand at 1,788-90 feet. Campbell & Beams and others' No. 1 George, NW cor. NE SW, Section 2-15-12, drilled to the Wilcox sand at 2,531 47 feet and plugged back to the Dutcher sand at 2,022-44 feet and was completed for 5,000,000 feet of gas.

Osage County

Phillips Petroleum Co. made location for No. 6, NW cor. NE SW, Section 17-27-6, Burbank Pool. Gypsy Oil Co.'s No. 8, NW cor. SE, Section 28-27-6, is spudding. Kewanee Oil & Gas Co. is building the rig for No. 6, NW cor. NE, Section 28-27-6. The rigs are also under construction for No. 1, SE cor. NE; No. 2, SW cor. SE NE; No. 3, SE cor. SW NE; No. 4, NW cor SE NE, and No. 5, NE cor. SW NE, all in Section 28-27-6. Osage Gas Producing Co. made location for No. 384, SE cor. NW, Section 5-27-11. Wah Sha-She Oil Co.'s No. 1, CNL S half NE, Section 6-27-12, is running 8-inch casing at 820 feet.

Phillips Petroleum Co.'s No. 1, SW cor. NW, Section 2-26-6, is a rig under construction. Location has been made for No. 2, NW cor. SW NW, Section 2-26-6. Carter Oil Co. has the rig up for No. 1, NE cor. SE, Section 3-26-6. The rig is also up for No. 2, NW cor. NE SE, Section 3-26-6, and for No. 3, NE cor. NW SE, Section 3-26-6. The rig for No. 4, SE cor. Section 3-26-6, has been built, also for No. 5, NE cor. SE SE, and No. 6, SE cor. NE SE, Section 3-26-6. Devonian Oil Co. made location for No. 1, NW cor. SE, Section 18-22-8. A. D. McDonnell's No 1, SE cor. SW, Section 6-21-9, is drilling at 1,600 feet, being deepened from 1,265 feet.

The Prairie Oil & Gas Co. is erecting the rig for No. 1 Stewart, SW cor. NW NW, Section 21-27-6. The rig is also being built for No. 1, NE cor. Section 10-26 6. The rig is being moved in for No. 2, SE cor. NE NE, Section 10-26-6.

George Parker's No. 1, SE cor. SW

GUERNSEY COUNTY REPORTS BEST WELLS FOR WEEK IN EASTERN FIELDS

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Dec. 26.—The list of completed wells during the week does not show any large wells. West Virginia completed more wells than southeast Ohio, but the volume of new production was very small. The gas companies have been quite active in many localities. As will be seen by the wells completed, there were many more gassers than oil producers.

In Spring Creek district, Wirt County, West Virginia, Deem Brothers completed in the Big Injun sand No. 4 on the Martin Smith heirs' farm. It is gasser. In Murphy district, Ritchie County, the Hope Natural Gas Co. completed a test on the T. N. Johnson farm. It is a gasser in the same formation.

The Mudlick Oil & Gas Co.'s No. 4 on the E. G. Davisson farm in Collins Settlement district, Lewis County, is a 2-bbl. pumper in the Gordon sand. In West Union district, Doddridge County, Nay & Kintzer, after a protracted fishing job, drilled their test on the M. J. Minear farm through the Big Injun sand. It is a very light pumper. In Glenville district, Gilmer County, the Pittsburgh & West Virginia Gas Co. drilled deeper its test on the H. C. Brinkle farm. It is a duster.

In Geary district, Roane County, the United Fuel Gas Co.'s test on the W. B. Sergent farm is a gasser in the Big Injun sand. In the same district the same company's test on the G. A. Wright farm. It is a gasser in the Big Injun sand. In Sheridan district, the United Fuel Gas Co.'s test on the A. J. Nitz farm is a gasser in the same formation. In Sherman district, W. H. Bickle has a gasser in the same formation at a test on the Micha Knight farm.

Wetzel County

In Church district, Wetzel County, the Manufacturers Light & Heat Co. has a duster in the Gordon sand at No. 4 on the J. A. Hixenbaugh farm. In McElroy district, Tyler County, J. D. Foley's test on the Rebecca Singer farm is a gasser in the Gordon sand.

On Trace Branch of Breeden Creek, Harvey district, Mingo County, the Public Gas Corp. has completed in the Maxon sand No. 17 on the Henry Closterman estate and is producing 30 bbls. a day. Owing to the shallow depth at which the Maxon sand is found (about 1,410 feet) it is profitable to drill for well of this size.

In Freemans Creek district, Lewis County, the Hope Natural Gas Co. has drilled deeper an old well on the J. C. Starcher farm and it is a pumper in the Gordon sand. In Glenville district, Gilmer County, the Pittsburgh & West Virginia Gas Co. has shut down to test for oil in the Big Injun sand.

Roane County

In Geary district, Roane County, Douglass Brothers have a gasser in the Big Injun sand. In the same district, the United Fuel Gas Co. has a gasser in the same formation at a test on the W. A. Geary farm.

Located 900 feet southeast of Noble Beattie's second test on the Fred Smith farm, Geary district, Roane County, the Virginian Gasoline & Oil Co. has completed a test on the Leo Boggs farm. It is good for 25 bbls. a day in the Big Injun sand.

In DeKalb district, Gilmer County, Beall & Brickerstaff have started to drill a test on the W. N. Cox farm. In Otter district, Braxton County, the Pittsburgh & West Virginia Gas Co. has made a location on the C. L. Engle farm. The same company has made locations on the D. S. and C. F. Engle and C. F. and D. F. Engle farms. In Union district, Ritchie County, W. A. Bickerstaff has a rig up on the Z. Wright farm. In the same district, S. W. Young is due in the Big Injun sand at a test on the William McCloy farm. In Murphy district, the Daniel O'Day estate is drilling a test on the

(Continued on Page 222)

HOLLOW BALLS

For many pumping problems ball valves are ideal.
But they must be balanced.
This is ordinarily done by making them solid.

Up to about 4″ diameter, solid balls are satisfactory. Above 4″ they are too heavy. They pound the seats.

So balls over 4″ must be made hollow.

The problem of balancing large hollow steel balls was unsolved until we simply *had* to solve it in order to take care of our larger hot oil pumps.

How well we have solved this problem we demonstrate by floating our hollow steel balls on a bath of mercury. The trifling inequality of wall thickness establishes the equilibrium. Then we roll the ball through one quarter turn, carefully let go and it rolls back to rest very lazily, indicating a ball entirely practical to be used as a valve.

We have dies for our Standard Sizes.
Other sizes if you have a quantity requirement.
Material—High Chromium Stainless Steel.

Let's have your inquiries.

Representatives

FRICK-REID SUPPLY COMPANY
Tulsa, Okla., or any store.

ASSOCIATED SUPPLY COMPANY
Los Angeles, San Francisco, Bakersfield, Fellows

E. L. WILSON HARDWARE CO.
Beaumont, Texas.

NATIONAL TRANSIT
Pump & Machine Co.
Oil City Pa.

DISTRICT OFFICES
NEW YORK PHILADELPHIA PITTSBURGH
CLEVELAND HOUSTON TULSA DENVER

Representatives

THE GLOBE SUPPLY & MACHINERY CO.
New Orleans, La

F. C. RICHMOND MACHINERY CO.
Salt Lake City, Utah

MORTON McI. DUKEHART & CO.
Baltimore, Md.

REEVES & SKINNER MACHINERY CO.
St. Louis, Mo.

NE, Section 22-25-7, has been abandoned at 2,680 feet. Kewanee Oil & Gas Co.'s No. 6, SE cor. NE SW, Section 34-27-6, Burbank Pool, was completed for 150 bbls. in the Burbank sand at 2,764-2,817 feet. Phillips Petroleum Co.'s No. 5, NE cor. SW, Section 17-27-6, made 425 bbls. from the Burbank sand at 2,898-2,960 feet. The Prairie Oil & Gas Co.'s No. 5, SE cor. NE NE, Section 20-27-6, was completed for 1,300 bbls. in the Burbank sand at 2,886-2,947 feet.

Okfuskee County

The Texas Company's No. 2 Tiger, SE cor. NE SE, Section 35-11-11, was completed for 3,000,000 feet of gas in the Deaner sand at 2,468-77 feet.

Pawnee County

Watchorn Oil & Gas Co.'s No. 4 Miller, SW cor. Section 33-23-3, Otoe Pool, has been plugged at 4,505 feet.

Pontotoc County

American Oil & Refining Co. has the rig up for No. 7 Balcrop, SE cor. SW NW SW, Section 9-4-6.

Texas Pacific Coal & Oil Co.'s No. 1 Miller, NE cor. NW SW, Section 27-5 6, has been abandoned at 2,980 feet. Louisiana Oil Refining Co.'s No. 3 McElroy, NW cor. SW SE, Section 17-5-8, made 150 bbls. from sand at 2,452-2,515 feet. W. R. Ramsey's No. 2 McElroy, NE cor. SW, Section 17-5-8, Allen Pool, has been shut in for 30,000,000 feet of gas from sands at 2,295-2,304 feet and 2,304-73 feet. No. 4 Milner, SE cor. Section 18-5-8, has been shut in for 22,000,000 feet of gas from sands 2,280-2,350 feet and at 2,350-55 feet. No. 1 Patterson, NE cor. NW, Section 29-5-8, has been abandoned at 2,844 feet. No. 1 Butler, NE cor. Section 30-5-8, had oil sand at 2,926-39 feet and made 275 bbls. American Oil & Refining Co.'s No. 1 Mercer, C E half SE, Section 8-4-6, has been shut in for 6,000,000 feet of gas in sand at 1,315-24 feet.

Rogers County

Lon Riggs' No. 1 Bryan, SW cor. SE NW, Section 1-21-16, is a 40-bbl. well in sand at 742-65 feet.

Stephens County

Cruce Oil Co.'s No. 1-A Frensley, SW cor. NW NE, Section 12-1-6w, is drilling at 50 feet. George Pace and others' No. 2 Fobb "C," SW cor. NW NE, Section 12-2s-8w, is rigging up rotary tools. Magnolia Petroleum Co.'s No. 1 McCulley, NW cor. NE, Section 28-1s-5w, is rigging up rotary tools.

Gilmer Oil Co.'s No. 4 Inscore, SW cor. SE SE, Section 24-1s-4w, has been abandoned at 3,075 feet. George Pace and others' No. 2 Fobb "C," SW cor. NW SE, Section 12-2s-8w, has been abandoned at 2,508 feet.

Tulsa County

Minshall and others moved a machine out for No. 5 Fife, SE cor. SW, Section 15-19-11. Jackson & Wise's rig is up for No. 3 Sango, NW cor. SW NE, Section 21-19-12.

Holmes and others' No. 1 Oklahoma Oil Co., CWL SW SE, Section 14-19-10, is dry and abandoned at 2,317 feet. Posey Short's No. 2 Clinton, NW cor. NE SE, Section 23-19-12, had sand at 1,142-78 feet from which it is making 250,000 feet of gas.

Wagoner County

Baldridge and others' No. 1 Childers, C SW NW, Section 22-18-17, is making 5,000,000 feet of gas from sand at 780-85 feet. Ted Ray Oil Co.'s No. 3 Bright, NW cor. SW SE, Section 4-17-16, has been completed for 35 bbls. in sand at 714-30 feet.

Hughes County

E. W. Whitney made location for No. 1 Huddlestone, SE cor. SW, Section 17-5-9. The Prairie Oil & Gas Co.'s No. 4 Hampton, NE cor. NW NW NW, Section 20-8-10, has been shut in for 16,500,000 feet of gas in sand at 3,698 3,706 feet.

Pottawatomie County

Magnolia Petroleum Co. made location for No. 1 M. Hardin, SW cor. NW, Section 12-7-4, Pearson area. McCulloch Oil Co. has the rig on the ground for No. 1 Long, SE cor. SW SW, Section 18-7-4. Continental Oil Co. made location for No. 2 Neghnguit, SW cor. SE NW, Section 19-7-4.

Magnolia Petroleum Co.'s No. 4 Cowden, SW cor. NE SW, Section 4-9-5, Earlsboro Pool, topped the Wilcox sand at 4,317 feet and drilled to 4,690 feet where it was abandoned. Tidal Oil Co.'s No. 4 Watkins, NW cor. NE NW, Section 9-9-5, swabbed 50 bbls. from Wilcox sand at 4,298-4,303 feet. W. B. Pine's No. 1 Lula, NE cor. SW, Section 4--9-6, Seminole City Pool, drilled Wilcox sand from 4,388 feet to 4,470 feet then plugged back to 4,370 feet and swabbed 50 bbls. Superior Oil Co.'s No. 1 Varnum, NE cor. SW NW, Section 4-9-6, was completed for 107 bbls. in the Hunton lime at 4,480-4,500 feet. No. 1 Cloude, SW cor. NW NW, Section 24-7-4, has been shut in for 17,000,000 feet of gas in Hunton lime at 3,742-75 feet.

Seminole County

Sinclair Oil & Gas Co. has the cellar dug for No. 3 Santo, NE cor. SE NE, Section 2-9-5, Earlsboro Pool. Blackwell Oil & Gas Co. made location for No 1 Porter, SE cor. SW, Section 3-9-8. The Texas Company dug the cellar for No. 1 Reed, SW cor. Section 12-8-5, Barnsdall Pool. Carter Oil Co. is rigging up rotary tools for No. 1 S. Micco, SE cor. NE, Section 9-8 6, Bowlegs Pool. Gypsy Oil Co. is erecting the rig for No. 2 Harjoche, SW cor. NW, Section 10-8-6. Carter Oil Co. is building the rig for No. 8 Fish, NE cor. SW NW, Section 36-8-6, Little River Pool. Continental Oil Co. is building the rig for No. 3 Cosar, NW cor. SE NW, Section 36-8-6. The rig is also being built for No. 4 Cosar, SW cor. NE NW, Section 36-8 6.

Sinclair Oil & Gas Co. is putting up the rig for No. 2 Cosar, SE cor. NW NW, Section 36 8-6. Gardner and others built the rig for No. 1 Harris, NW cor. SE, Section 36-6-7. W. R. Ramsey made location for No. 1 Hulwa, SE cor. NE, Section 7-5-8. Louisiana Oil Refining Co. is building the rig for No. 2 Reed, SE cor. NE NE, Section 18-5-8, Allen Pool. The rig is up for W. R. Ramsey's No. 1 W. Culley, NE cor. SE NE, Section 18-5-8.

Gypsy Oil Co.'s No. 1 Solomon, SE cor. NE, Section 21-10-7, has been completed for 380 bbls. initially from Cromwell sand at 3,730-34 feet. Barnsdall Oil Co.'s No. 2 Sango, NE cor. SE NW, Section 1-9-5, Earlsboro Pool, made 3,129 bbls. from Wilcox sand at 4,704-08 feet. Carter Oil Co.'s No. 3 Sango, SE cor. NE SW, Section 1-9-5, was completed for 715 bbls. in the Wilcox sand at 4,320-34 feet. The Texas Company's No. 6 Wilmott, NE cor. SE, Section 10-9 5, made 200 bbls. on the swab, producing from the Wilcox sand at 4,517-19 feet.

Magnolia Petroleum Co.'s No. 7 Seay, NW cor. SW SW, Section 12-9-5, made 25 bbls. from the Wilcox sand at 4,336-44 feet. Gypsy Oil Co.'s No 4 Butler, SE cor. NE NE, Section 35-9-6, Seminole Pool, was completed for 250 bbls. by swabbing from the Wilcox sand at 4,210-77 feet. Pure Oil Co.'s No. 7 Strothers "D," SE cor. SW, Section 11-8-6, Bowlegs Pool, made 281 bbls. from the Wilcox sand at 4,475 85 feet. Magnolia Petroleum Co.'s No. 1 Rhoades, SE cor. NE SW, Section 12-8-6, had the Wilcox sand at 4,158-88 feet and made 678 bbls. The Prairie Oil & Gas Co.'s No. 7 Jones, NE cor. NW SE, Section 11-8-6, flowed 285 bbls. from the Wilcox sand at 4,190-4,206 feet. Carter Oil Co.'s No. 2 Walker, NW cor. SW SE, Section 15-8-6, topped the Wilcox sand at 4,057 feet, had lime at 4,124-43 feet, drilled to 4,160 feet and made 135 bbls. by swabbing. Amerada Petroleum Corp.'s No. 3 Pattey, NE cor. NW NE, Section 35-8-6, Little River Pool, was completed for 850 bbls. in the Wilcox sand at 4,263-74 feet. Producers & Refiners Corp.'s No. 3 Dungan, NE cor. NW SE, Section 35-8-6, had an initial production of 600 bbls. in the Wilcox sand at 4,454-58 feet. Magnolia Petroleum Co.'s No. 1 Cruse, NW cor. SE SE, Section 2-7-6, made 767 bbls. from the Wilcox sand at 4,207-15 feet.

SLIGHT INCREASE IN WILDCATTING LOOKED FOR IN KANSAS FIELDS

By J. L. Dwyer
Staff Correspondent, Kansas Fields

The holiday lull had its effect upon the Kansas fields, with the Oxford Townsite Pool, the only interesting operation. A slight increase in wildcat activity is promised for the start of the new year with the northwestern part of the state the scene of a leasing campaign.

Barber County

Barton Oil Co. has the rig on the ground for No. 1 Blunk, C NE NW, Section 20-34-13w.

Barton County

Huffine & Crane's No. 1 Everleigh, C SW SW, Section 6 18-12w, is dry and abandoned at 4,390 feet.

Butler County

Basom and others made location for No. 1 Tavender "A," NE cor. SE NE, Section 26-28-6.

Cowley County

Derby Oil Co. has the rig up for No. 1 Seaman, NE cor. SE NE, Section 32-30-3e. Trees Oil Co. has moved the rig out for No. 1 King, SW cor. SE NE, Section 14-31-4. Skelly Oil Co. has the rig on the ground for No. 1 Saunders, NE cor. NW NE, Section 31-31-6.

J. A. Hull's No. 2 Runman, NW cor. SE SW, Section 24-32-4, was completed for 50 bbls. after shooting 240 quarts in sand at 2,960-3,041 feet. Shawver and others' No. 1 Vestal, SW cor. NE, Section 19-34-3, is a dry hole at 1,884 feet. Nathan & Brinn's No. 1 Hughes, NE cor. NW SE, Section 17-34-4, is dry at 648 feet.

Greenwood County

Empire Oil & Refining Co. has the rig up for No. 2 Ott "C," NE cor. NW NE, Section 26-22-12. Bisagno and others moved a machine out for No. 2 Roglin, NW cor. SE SW, Section 10-25-13. Valley-Osage Oil Co. made location for No. 2 Roglin, NW cor. SW SE, Section 10-25-13.

Manhattan Oil Co.'s No. 6 Sheppard, SW cor. NW NW, Section 11-22-10, was shot with 100 quarts and made 250 bbls. from sand at 2,145-82 feet. Theta Oil Co.'s No. 2 Fankhouser, SW cor. SE SE, Section 23-22-12, made 150 bbls. after a shot of 240 quarts in sand at 1,645-1,791 feet. Empire Oil & Refining Co.'s No. 1 Ott "B," NE cor. Section 26-22-12, made 160 bbbls. after being shot with 220 quarts in sand at 1,648-1,705 feet. Davis and others' No. 1 School Lot, SW cor. NW NE, Section 30-22-13, is dry and abandoned at 1,790 feet.

Morris County

Skelton and others built the rig for No. 1 Illes, NW cor. Section 25-16-5.

Stephens County

Independent Oil & Gas Co.'s No. 1 Crawford, C SW Section 31-33-37w, has been completed for 5,000,000 feet of gas in sand at 2,620-2,805 feet after plugging back from 3,505 feet.

Sumner County

Edenfield and others' No. 1 Barnes, Oxford Townsite, Section 14-32-2e, is drilling at 2,000 feet. Roxana Petroleum Corp.'s No. 6 Emerich, NE cor. NW NW SE, Section 14-32-2e, Oxford Townsite, is drilling at 1,340 feet. No. 7 Emerich, CNL NW SE, Section 14-32-2e, Oxford Townsite, is drilling at 1,740 feet. The rig is being built for No 8 Emerich, SW cor. SE, Section 14-32 2e, Oxford Townsite. The rig is under construction for No. 3 Nevitt, Tract 5, Oxford Townsite. McNabb & Bess made location for No. 1 Veail, NE cor. SE, Section 22-32-2e. Harris & Haun's rig is being built for No. 1 Tamsh, C SE SW, Section 14-34-2e.

Derby Oil Co.'s No. 1 Oxford Townsite, Block 88, Section 14-32-2e, made 370 bbls. from sand at 1,250-52 feet. Roxana Petroleum Corp.'s No. 1 Rothwell, SE cor. NE SW, Section 14-32-2e, Oxford Townsite Pool, made 1,000 bbls. when shot with 140 quarts in sand at 1,961-2,088 feet. Hartman & Skaer's No. 2 Hamilton, SW cor. SE NE, Section 18-35-1e, was completed for 6,000,000 feet of gas in sand at 2,266-2,301 feet.

Little River

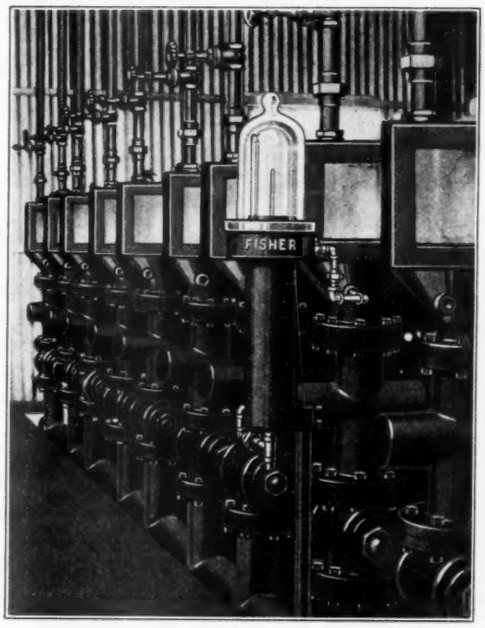
Company and Farm—	Wells	Prod.
Amerada:		
Fore	2	1,400
Nitey	4	2,700
Blackwell:		
Nitey	8	4,640
Carter:		
Fish	4	3,875
Continental:		
Cosar	2	900
Gypsy:		
Campbell	2	310
Nungee	1	80
Pottey	2	600
Wadsworth	1	37
Independent:		
Harris	1	100
Indian Territory:		
Campbell	1	200
Dungan	3	3,250
House, M. A.	1	540
House, W. E. "A"	1	54
House, W. E. "B"	3	2,200
Jackson	3	2,830
McCulla	3	1,100
Nitey	6	1,900
Phoebe, "A"	2	75
Phoebe "B"	3	1,010
Reed	1	165
Soketheche	4	1,020
Magnolia:		
Cruse	1	930
Mid-Continent:		
Wadsworth	7	3,625
Smith	1	60
Philmack:		
Davis	1	3,775
Pine and Phillips:		
Pottey	1	400
Prairie:		
Dungan	2	145
House	4	2,450
Roxana:		
Smith	1	----
Sinclair:		
Cosar	1	200
Superior:		
Wadsworth	1	25
Snowden & McSweeney:		
Tiger	1	----
Texas:		
Coker	3	750
Tidal:		
House	3	1,850
Johnson	1	90
Total	86	38,330

Bowlegs

Amerada:		
Rasco	8	3,200
Atlantic:		
Baker	4	750
Fleet	4	700
Grayson	3	1,071
Jones, A.	3	327
Jones, C.	2	433
Barnsdall:		
McNac	1	95
Murrow	4	1,100
Carter:		
Bowlegs	3	1,300
Burden	3	500
Harjoche	6	1,025
Hilly	2	850
Jones	3	2,300
McGeisey	1	----
Melisse	1	1,200
Walker	3	580
Wise	12	7,000
Empire:		
Lacy	6	825
Wise	2	1,097
Gypsy:		
Bowlegs	1	220
Bradley	1	50
Brown	1	50
Cumsey	4	1,925
Dosar	1	65
Grayson	4	1,200
Harpoche	1	1,237
Henderson	1	----
Jones	1	----
Walker	8	2,640
Wise	3	37
Indian-Territory:		
Barnett	2	340
Billington	5	834
Bowlegs	11	962
Burden	1	16
Davis	4	2,032
Fay	7	3,331
Gorforth	11	1,845
Hull	1	21
Livingston	11	4,689
Lizzie	2	807
Walker	8	1,451
Wilmont	4	1,513
Work	1	----
Youngblood	2	----
Magnolia:		
Davis, B. F.	1	272
Davis, M.	1	578
Hammond	2	----
Rhoades	2	634
Van Buskirk	1	429
McColloch:		
Bowlegs	3	392
Mid-Continent:		
Baker	4	2,269
Bowlegs	1	----
Hutke	1	----
Smith	4	980
Minnehoma:		
Bowlegs	3	337
Prairie:		
Gahagan	4	1,163
Harber	8	4,295
Jones	3	1,233
Templeton	4	4,440
Whitney	4	470
Pure:		
Reed	15	5,170
Strothers "D"	4	1,040
Strothers "E"	1	5
Strothers "F"	2	1,003
Roxana and Houston:		
Taylor	6	1,567
Shaffer:		
Lacy	3	653
Sinclair:		
Bowlegs	1	40
Cumsey	2	4,470
Cumsey	6	2,685
Ellen	3	1,195
Harjo	6	5,790
Jones	4	4,240
Taylor	4	----

(Continued on Page 225)

LOSSES ARE HIDING IN THE TAIL HOUSE

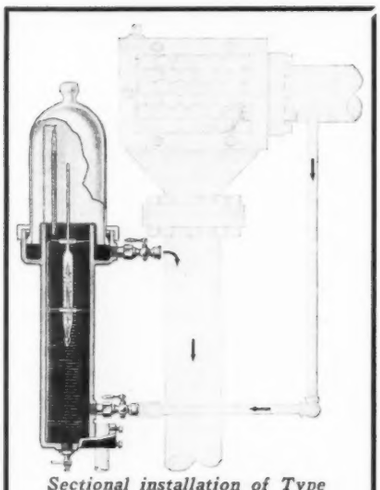


Installation of a FISHER Type 605 in a California Refinery.

ANNOUNCING

Exterior Type 605.

THE FISHER
CONTINUOUS SAMPLE HEAD
TYPE NO. 605
A NEW FISHER PRODUCT
FOR THE REFINERY
TAIL HOUSE
SHOWS GRAVITY OF
STREAM WITHOUT
DRAWING SAMPLE
ELIMINATES
WASTE AND FIRE HAZARD



Sectional installation of Type 605 showing stream.

Our New Catalogue is Ready for Distribution

The Fisher Type 605 uses the standard hydrometer and thermometer which shows the gravity and temperature of the stream—merely look through the glass dome. This device eliminates the necessity of drawing the hourly sample from each still and consequently means a great saving. Will give a true gravity and temperature of all cuts from the naphthas to the "off" point.

THE FISHER GOVERNOR CO.

404 FISHER BLDG.

MARSHALLTOWN, IOWA, U. S. A.

Buys Southwest Texas Gas Acreage

Properties in Refugio and Mirando Fields Purchased by Houston Gulf Gas Co. Good Well in Dale County

By B. D. Stevenson
Staff Correspondent, Southwest Texas

SAN ANTONIO, Tex., Dec. 26.—Sale of producing gas properties in the Refugio and Mirando Fields along with some wildcat acreage by William F. Morgan, Inc., to the Houston Gulf Gas Co. for "around" $1,000,000 is not only the biggest deal that has been made in Southwest Texas during 1927 but is also about the only one of any size. Other features of the deal are that all the properties have been accumulated within the past four years by Mr. Morgan who took a "standing" start in the Mirando Field a few years ago and was successful in the Randado Pool in developing oil production but has been particularly successful in the development of gas. Beginning with limited assets at Laredo but with considerable experience in the oil business accumulated while working for various oil companies he has disposed of practically all of his holdings and soon after the first of the year will be associated in an executive capacity with the Houston Gulf Gas Co. and it is understood there will be considerable expanding of the natural gas industry in Southwest Texas the coming year by this company.

In the Refugio gas field Mr. Morgan had 16 wells and 9,000 acres of leases and 51,000 acres of wildcat acreage in one block in San Patricio County south of the Refugio Field which is well chosen and seems to be on a gas structure. This property was sold for $634,000 and the Mirando property, consisting of 35,000 acres and 20 producing gas wells, was sold for $300,000. Included in this deal is also one or two wells in Medina County and a little acreage there in the Adams gas field. Some of the property in the Refugio Field was held in the name of the Coast Gas Co., all of the stock of which company was owned by William F. Morgan, Inc. The consideration for the property to Mr. Morgan represents practically all profit as the properties carried practically no indebtedness and the big end of the consideration was cash.

Southwest Texas is supplying an enormous amount of natural gas and reports of the best geologists say that the gas supply is such that it can be counted on by pipe line companies for an almost indefinite period. A big expansion in the natural gas business will come during 1928 and before the close of that year there will be practically no worthwhile city of size sufficient to pay a company for running a line to it but will have natural gas.

Dale Field

In the proven fields nothing of importance was completed the past week. In the Dale Field, The Texas Company has a well that is flowing 135 bbls. It is No. 1 Osteen and is a northwest offset to the Sun Oil Co.'s No. 2 Talley, but seems to be a much better well as the Sun's well pumps only about 30 bbls. daily. The Texas Company's well is flowing by heads and oil coming from both inside and outside the casing. The well will have to be worked over and casing reset. It is one of the best wells the field has brought in thus far and seems to indicate still farther that the formation in the field is spotted. The explanation of small wells alongside better ones is that the Serpentine is more tight and compact in the smaller wells. The Texas Company has two other wells it is drilling in and they are the sum total of the activity in the field. The Texas Company's No. 1 Osteen being a good well seems to call for some additional offsetting in the southwest, however.

Kingsville Field

In the Kingsville Field in Kleberg County Humble company is running one rig and it looks like in No. 4-A Dennett it will get a good well at approximately the same depth as No. 2-A Dennett which is 400 feet north. No. 4-A Dennett is 550 feet south of the north line and 150 feet east of the west line of Lot 1, Block 39 of the Kingsville Field, and it cored 17 feet of oil sand at 2,238-55 feet, which is approximately the same depth as the well 400 feet north of it. It is now reaming to set 6⅝-inch casing. A feature of the field is that No. 2 Flato in the northeast corner of Lot 10, Section 40, a half mile south and a quarter mile west of the No. 4-A Dennett, has started to flow. Its depth is 2,930 feet and it has been a small pumper of 10 to 20 bbls. for the past two or three years. It sanded up and when the Humble company pulled the tubing to clean it out it started flowing, making 126 bbls. in 12 hours and was still flowing at last accounts. It is the only well in the field producing at that depth.

COMPLETIONS

Lavaca County

M. L. Benedum's No. 1 Russek, J. G. Reynolds Survey, Block 38, abandoned at total depth of 3,275 feet.

Live Oak County

R. P. Lightfoot's No. 1 Thomas, Survey 963, Block 19, has been abandoned dry at 1,316 feet.

Gonzales County

Green & Shall's No. 1 Dubose, G. McConnel Survey, has been abandoned at 3,123 feet dry.

Medina County

Southern Gas Utilities, Inc.'s, No. 3 Schmidt, Adams gas field, total depth 1,471 feet, in Survey 71, has been abandoned dry, sand at usual depth testing dry.

Refugio County

William F. Morgan's No. 8 Lambert, location in Survey 8 in the Refugio gas field, has been abandoned.

New Locations

Cole Petroleum Co.'s No. 51 Benavides, Survey 412, Block 5, Cole Pool in Webb County, is location 160 feet to north line and 150 feet to west line.

Holdman & Caldwell have 30,000 acres under lease on Kendall-Blanco County line and are making location, having deposited $15,000 in escrew to drill a 2,500-foot test.

Dickinson & Smith's No. 1 Martin Callahan, Willard Cooper Survey, Caldwell County, 1,000 feet east and 150 feet south of United North & South's No. 1 Callahan, is moving in machinery.

E. V. Chenoweth's No. 1 fee, G. Manchaca Survey No. 58, in LaSalle County, is location in north central part of lease, out of Irwin ranch, and has been spudded in.

Roxana Petroleum Corp. is moving in machinery for test 10 miles west of Raymondville, in Willacy County.

J. E. Barron is reported to be getting ready to drill a test near the salt lake west of Raymondville in Willacy County.

Ed East's No. 1 A. W. Harding, Willacy County, is assembling acreage for the test several miles east of Raymondville.

Cole Gas Field—Duval

Morgan-Humphrey's No. 1 Harper, Survey 323, is making location. Houston Oil Co. (Humble) No. 1 Juan V. Cuellar, Share 1, located 3,300 feet to southwest lines and 2,324 feet to southeast lines, is drilling at 350 feet. Cole Petroleum Co.'s No. 50-B Benavides, Survey 5, Block 7, located 611 feet to northwest lines and 625 feet to northeast lines, is ratholing at 2,160 feet.

Humble-Reiter-Foster Field

Humble Oil & Refining Co.'s No. 7 Kohler, Survey 165, located 200 feet to north and west lines, has rigged up.

Piedras Pintas Dome

Humble Oil & Refining Co.'s No. 7 Walsh, Survey 185, located 2,050 feet to east line and 1,750 feet to north line, is drilling in sand and shale at 4,339 feet.

Randado Field—Jim Hogg

Magnolia Petroleum Co.'s No. 32 Merchants State Bank, Survey 415, located 850 feet to west line and 2,100 feet to north line, is drilling at 2,360 feet; No. 33 Merchants State Bank, Survey 415, is a location 2,400 feet to north line and 690 feet to west line. Johnson and others' No. 22 Palacious, Survey 291, Block 4, located 1,050 feet to west line and 450 feet to south line, is drilling at 600 feet.

Alworth Pool

Alworth-Stevens-Hild's No. 10 M. Garza, Survey 39, Block 7, located 300 feet to northeast lines and 110 feet to southeast lines, is drilling at 600 feet.

Reiser Pool—Webb

W. O. Wheatley's No. 2 Reiser, north half of Survey 1,617, Block 8, located 150 feet to south and east lines, has been spudded in.

Aviator or Bruni Tracts

F. J. Bates' No. 1 Bruni, Block 47, located 150 feet to south and east lines, is standing at 2,005 feet.

Carolina-Texas Field

Serna-Forrest's No. 1 Benavides, Survey 2,272, Block 2, located 150 feet to north line and 200 feet to east line, has been spudded in.

Dale Field—Caldwell

The Texas Company's No. 5 Lackey, Jasper Gilbert Survey, 150 feet to northeast and southeast lines at 2,156 feet, is drilling (test previously reported as No. 1 Moore). No. 1 Osteen, W. C. Swearingen Survey, 150 feet to southeast and southwest lines, at 2,206 feet in Serpentine topped at 2,171 feet is flowing by heads of 135 bbls. daily, but oil is coming from both sides of the casing which will be reset; No. 2 Osteen, same survey, is in chalk at 2,334 feet and set casing ready to drill in.

Luling Field

Magnolia Petroleum Co.'s No. 3 McKinney, J. Henry Survey, 300 feet southwest of No. 2, is drilling at 2,083 feet. Pat M. Armstrong's No. 1 Hardeman, Miles G. Dykes Survey, 150 feet to northwest and southwest lines of farm, is drilling at 50 feet. North & South's No. 1 Kelly is drilling at 7,268 feet; No. 2 Tiller is drilling at 6,815 feet.

Kingsville Field—Kleberg

Houston Oil Co.'s No. 3 Kissman, Section 41, Block 10, located 500 feet to north and west lines, has derrick up and standing. Humble Oil & Refining Co.'s

(Continued on Page 205)

INCREASED ACTIVITY EXPECTED IN SOUTHWEST WILDCATTING

By B. D. Stevenson

SAN ANTONIO, Tex., Dec. 26.—There is a little better atmosphere among oil men generally in the belief that the first of the year will see some increase in activity in spite of the fact that the price structure of the oil business remains at a low mark. There are at least four major companies that are planning to begin buying acreage soon after the first of the new year. Right now and for some weeks past there has been very little acreage moving. A few deals have been put over and wells financed, but they have been quite few. The gas business has helped to keep things moving along during the past year and will help very materially during the coming year.

There are several wildcat spots getting attention now. The Driscoll well on the Robert Driscoll ranch in Duval County in Section 23 is about to drill out the plugs as this was being written. It had been intended to drill in Thursday but the work was delayed. It has every probability of making a good-sized gas well at 2,450 feet and the thing of interest will be the size of the well and whether it makes much if any oil. The well that was lost 400 feet south of it sprayed quite a considerable amount of oil. As pointed out that week this well is on a fold to the east of that on which the Cole and O'Hern & Seacord Pools are and it has real sand and therefore it is thought possible that north and south on this fold there may be room for more pools.

Interesting Wildcat

Another wildcat of interest is Milo E. Trussell's No. 1 Moody in northwestern Duval on Survey 60 where the Schlessinger Oil Corp. got a lot of oil in three wildcat wells but failed to make a completion. At 2,370 feet late last week Trussell was feeling ahead for the sand and in another week may have something to report.

Humble Oil & Refining Co. is rigging up for its No. 7 in Duval County north of the Cole and Simms Pools where it has completed two small wells that are just in the commercial class and in wildcat territory and where it is hoped to develop a worthwhile pool.

Among the wells waiting till after the holidays to drill in is the J. G. Pundt wildcat in Zavala County which has a showing of gas at 1,310-12 feet in north central Zavala County.

Rycade Oil Corp., which shut down No. 2 Sullivan in Maverick County at 5,445 feet when it tested salt water, is resuming drilling. The other two wells are standing.

Last week it was reported there was to be further drilling of the structures along the Balcones fault zone in Caldwell and Bastrop and five or six wildcats are already located in that district or starting to drill. Another territory that will be worked over is western Guadalupe County. A couple of years ago a half dozen or more of the big companies and some independents drilled wildcat wells in that district. The Dixie company was the first and its well was on the Guadalupe County side of the Cibolo River. The well is still seeping some oil. Now the geology has been restudied and the territory all gone over again. The Texas Company took a lead in geologizing the territory again. A lot of acreage has been leased that had expired or was passed up during the first drilling campaign. In all probability there will be some wells drilled.

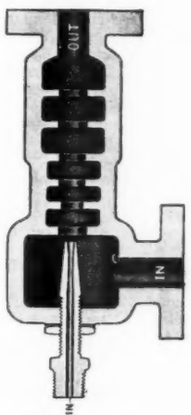
Deeper Drilling Plans

Two years ago everybody was looking for production in the Edwards lime and trying to duplicate the Luling Field.

(Continued on Page 223)

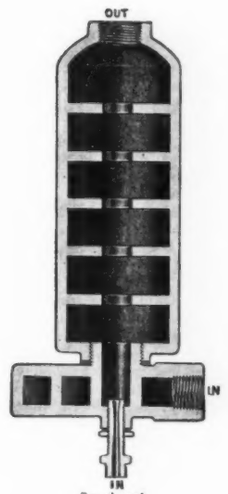
THE TREATS ARE ON US

Turbulent and Jet Type No. 603



Type No. 603, Sectional Turbulent and Jet Type Mixer

Type No. 601 Cyclonic Mixer



Sectional Type No. 601

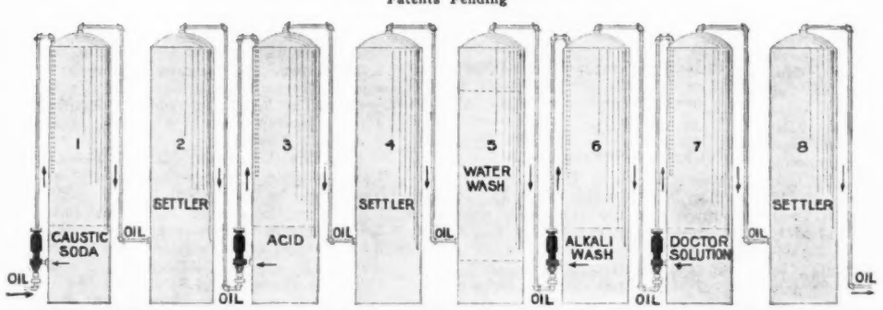
FISHER now offers specialties for the refinery treating Department. The above mixers are especially designed for mixing oil with the acid or alkali. The nozzle which introduces the acid or alkali to the mixing chamber is made of non-corrosive metal and is adjustable so that the ratio of oil and treating medium is variable. No air is needed to create the mixture. The oil and treating medium meet at the mouth of the nozzle and as the oil is under pressure the two liquids are swirled, contracted, and expanded through the mixing chamber being emitted into the agitator as a perfect solution.

Fisher Fluid Mixers

For the Intimate Mixing of Fluids

Patents Pending

These Mixers Will Create Perfect Solution in Agitators



Eliminates Chance of an Explosive Mixture Forming in the Agitator

Above, Flow Chart Showing Proposed Installation of Fisher Mixers.

THE FISHER GOVERNOR CO.

404 FISHER BLDG. MARSHALLTOWN, IOWA, U. S. A.

Champagnolle Is Arkansas Feature

Completion of 25,000,000-Foot Gas Well Offers Fuel for Other Operations Early in New Year

By D. H. Bancroft
Staff Correspondent, North Louisiana-Arkansas

SHREVEPORT, La., Dec. 26.—If the preceding week went to one extreme, so far as completions are concerned, with only 12 new wells of which but 1 was a producer, 6 gassers and 5 failures, the preholiday week went to the other extreme with 25 completions of which 11 were gas wells, and 6 failures. Practically all the several fields in Shreveport territory were represented but the most interesting of the completions were in Champagnolle Pool of Union County, Arkansas. That pool's first dry gas well was completed by Ohio Oil Co. in No. 1 Rich Pumphrey in Section 1-17-14, which gauged 25,000,000 feet from 3 feet of sand to 3,010-13 feet. Location is in the NE cor. SE SE of the section with bottom of the hole at about the average depth, possibly a little higher, than other completions of the pool. The well will supply fuel to other operations in that area, which is expected to show considerable activity after the first week or two of the new year.

Ohio Oil Co. also completed the best well of which the pool is able to boast, Eddy Jones' No. 1 Crain in Section 2-17-14, made about the same initial production, but with it there was much salt water, whereas Ohio's No. 5 Crain in Section 1-17-14, is reported flowing 500 bbls. of clean oil from 7 feet of sand at 3,049-56 feet. Jones' well went dead Thursday after last gauge had shown it making 2,000 bbls. fluid of which 400 bbls. was oil. It is believed that the water is due to a split casing or a leaky joint on the other hand no other completions have made any such amount. Magnolia Petroleum Co. has a 4-inch line into the field from Lege tank farm, and it is also reported that Root Refineries, Inc., with a plant at El Dorado, is taking some of the production.

Union County had another completion in Grimes Brothers' No. 1 Williams in Section 8-18-14 of the old El Dorado East Side Pool which is pumping 300 bbls. of fluid, 75 per cent water, from 10 feet of sand at 2,229-39 feet. The quarterly distribution of severance tax funds made a few days ago gave Union County schools and roads $46,031.71. The county's receipts from this source of income for 1927 is $240,000. Last year revenue from Smackover, El Dorado and Lisbon fields totaled $330,000.

Nevada County Producers

Three Nevada County wells which have been standing for several weeks were brought into production during the week with an addition of 185 bbls. per day. Humble Oil & Refining Co. put No. 4-B Grimes, Section 1-14-21, on the beam for an initial 60 bbls. from sand at 1,136-40 feet. J. J. O'Brien's No. 15-A Moss, in the same section, is pumping 100 bbls. from 6 feet of sand at 1,164-70 feet, and Wright Oil Co. is pumping 25 bbls. per day from sand at 1,148-51 feet in No. 3 Groves, Section 12-14-20.

Belchic & Laskey's No. 1 F. W. Robinson, Section 22-23-12, Cartersville district of Bossier Parish, tested 15,000,000 feet of gas with a spray of salt water, total depth 3,085 feet and C. F. Davis' No. 4 Simpson in Section 14-16-12, Sligo district of Bossier, was completed with 1,500,000 feet of gas, total depth 860 feet.

Pine Island Trinity development furnished the best well of the week in Magnolia Petroleum Co.'s No. 21 Robertshaw, Section 23-21-15, which was completed December 17 flowing 600 bbls. pipe line oil, total depth 3,930 feet. But it also shows a failure in Arkansas Natural Gas Co.'s No. 2 C. W. Lane in Section 13-21-15, which is abandoned as a junked hole at 3,742 feet after standing as temporarily abandoned since October 26. Liner was lost at 3,641 feet and 6⅝-inch casing whipstocked at 3,495 feet. The Texas Company put No. 14-B Noel, Section 14-21-15, on the air and is getting 40 bbls. per day from 3,050 feet. Three weeks ago it tested 40 bbls. oil and 300 bbls. salt water.

Monroe gas field had one completion. Southern Carbon Co.'s No. 8 Fairbanks in Section 38-19-4, Ouachita County, gauging 4,777,000 feet of gas sand at 2,133 feet, 850 pounds rock pressure.

Richland Parish gas field had another big gasser in Natural Gas & Fuel Co.'s No. 1-A Sartor, Section 9-16-6, which came in with an initial production of 66,207,000 feet of gas, total depth 2,455 feet.

Pleasant Hill Completions

The Pleasant Hill, or Pelican, district of Sabine Parish which has been missing from the completions records for the last month or more, shows two completions this week. Magnolia Petroleum Co. completed No. 2 Rembert in Section 32-10-12, flowing 45 bbls. of clean oil, total depth 3,240 feet, and Jack Moffat and associates put No. 3 Moore, Section 5-9-12, on the pump for 30 bbls. after it failed to flow through tubing, total depth 3,332 feet. Both of these wells, the latter in the southwest extension of production developed by Moffat's No. 1 Moore in the same section, are somewhat deeper than the producers in the discovery area a mile or two northeast.

The Mooringsport district of Caddo Parish had a completion at 2,215 feet in Simplex Oil Co.'s No. 1 Hunsicker, Section 15-20-15, which is flowing 150 bbls. clean oil, total depth 2,215 feet. As old as this district is and as old as the production from this formation is, this well is rather out of the ordinary for recent completions in that it is flowing natural rather than being pumped.

In the Cotton Valley district of Webster Parish Magnolia Petroleum Co. completed No. 5 Marshall in Section 21-21-10, pumping 170 bbls. fluid, 20 bbls. oil, from 3 feet of sand at 2,528-31 feet, and Ohio Oil Co. finished No. 4 Holloway, Section 23-21-10, as a Trinity gasser making 2,317,000 feet at 1,300 pounds rock pressure, total depth 4,537 feet. In the Sarepta gas field of Webster, Magnolia's No. 1 Newsom, Section 32-23-10, is a completion making 36,300,000 feet of gas from 5 feet of sand 2,634-39 feet.

Production Goes Up

Pipe line runs from the field from all pools in the Shreveport group increased 1,950 bbls. during the week from the total for the week before, running 144,420 bbls. compared to 142,470. North Louisiana pools contributed the larger part of this increase, running 48,583 bbls., an increase of 1,358, and Arkansas running 95,837 bbls., an increase of 592 bbls.

In Louisiana Caddo light oil shipments averaged 307 bbls. more than last week whereas the heavy oil movement was 226 bbls. under last week's average. Homer was almost stationary with an increase of only 42 bbls. and Haynesville fell off 159 bbls. DeSoto-Red River pools shipped 180 bbls. per day more than last week and Elm Grove showed a slight decrease—32 bbls. Bellevue dropped 12[illegible] bbls. per day and the Pelican district of Sabine Parish 15. Cotton Valley's shipments were 171 bbls. per day more than last week's average and Urania gained 202 bbls.

Arkansas movement was 428 bbls. under last week's average for El Dorado, Smackover light oil runs were 291 bbls. above last week's average but the heavy oil runs dropped 418 bbls. Stephens gained 204 bbls. and Nevada Couunty 420 bbls. Lisbon dropped 313 bbls. Daily average runs from the several pools for the week were:

Louisiana

Caddo light	12,4[illegible]
Caddo heavy	3,74[illegible]
Homer	4,40[illegible]
Haynesville	6,83[illegible]
DeSoto-Red River	4,38[illegible]
Elm Grove	42[illegible]
Bellevue	1,04[illegible]
Cotton Valley	5,46[illegible]
Urania	8,72[illegible]
Pelican	73[illegible]
Total	47,561

Arkansas

El Dorado	6,032
Smackover light	9,466
Smackover heavy	72,883
Stephens	1,304
Nevada County	3,570
Lisbon	2,337
Bradley	133
Total	95,837
Both states	143,420

NORTH LOUISIANA
Bossier Parish.

Cartersville—Arkansas Natural Gas Co. is drilling No. 1 Barnett, Section 17-23-12, at 1,920 feet. Magnolia Petroleum Co. has set 8⅛-inch casing at 3,053 feet in No. 1 D. W. Robertson, Section 26-23-12. O'Brien Brothers' No. 1 Farrington in Section 21-23-12, is drilling at 1,325 feet. Woodley & Collins are drilling sandy shale at 3,107 feet in No. 3 L. & A., in Section 15-23-12, after testing dry at 3,087 feet with a show of salt water and oil on second drill stem test at 3,092 feet.

Bellevue—Autrey Oil Co. began drilling No. 4 Snyder, December 17, set 10-inch casing at 40 feet and are drilling at 300 feet. Location is 1,495 feet south and 995 feet east of NW cor. NE, Section 22-19-11. Humble Oil & Refining Co. is drilling hard sand at 4,708 feet in No. 30 Bliss & Wetherbee in Section 15-19-11.

Elm Grove and Sligo—C. F. Davis has made location for No. 5 Simpson, 1,704 feet east and 420 feet south of NW cor. SW, Section 14-16-12, built his derrick, rigged up and is drilling at 400 feet with 10-inch surface casing set at 186 feet. J. S. McCullough began drilling No. 5 Hodges in Section 25-16-12, December 15, set 10-inch surface casing at 105 feet and is drilling at 680 feet. Palmer Corp. cemented 8-inch casing at 1,687 feet in No. 1 Burke, Section 26-17-12.

Caddo Parish

Pine Island—Arkansas Natural Gas Co. has drill stem stuck at 4,090 feet in No. 1 Lane, Section 13-21-15. Dixie Oil Co. cemented a cavity run into at 3,690 feet in No. 9 Clark, Section 14-21-15; No. 9 Caddo Mineral Lands in Section 23-21-15, is swabbing a little oil with salt water after drilling through cemented bottom at 3,909 feet; No. 90 Dillon in Section 14-21-15, is drilling at 3,766 feet and No. 92 Dillon in Section 13-21-15, is drilling at 2,903 feet. No. 1 D. A. Huckaby, Section 33-22-15, set 10-inch casing at 80 feet and is drilling at 583 feet; No. 4 H. H. Huckaby, Section 11-21-15, is coring at 3,628 feet.

Gulf Refining Co.'s No. 10 Herndon, Section 15-21-15, is waiting on standard rig at 3,921 feet after being deepened from 3,848 feet; No. 14 Tyson, Section 14-21-15, also being deepened after com-

(Continued on Page 205)

DE SOTO WILDCAT MAKES 40 BBLS.; CHAMPAGNOLLE HAS GOOD GASSER

By D. H. Bancroft

SHREVEPORT, La., Dec. 26.—Completion by Benson Oil Co. of its No. 1 Wolff in Section 3-10-13, as a 40 bbl producer flowing through 2½-inch tubing, and a 25,000,000-foot gas well in the Champagnolle district of Union County, Arkansas, were the chief developments in Shreveport territory during the holiday week. In Mississippi, Natural Gas & Fuel Corp. shot No. 1 Rye in Section 22-15-17, Monroe County, with 40 quarts in 22 feet of broken sand and lime at 2,693-2,715 feet and brought production up somewhat from the original 3,000,000 feet of gas, but further improvement is expected after 5⅞-inch casing is set above the gas rock at 2,693 feet. Advices from the company's headquarters in El Dorado, Ark., are that plans for future development of its rather sizeable block of acreage will not be decided upon until the Rye well has been thoroughly tested by metering the gas.

Meanwhile R. E. Zuendt, whose No. 1 Taylor is in Section 30-14-17, 5 miles northwest of the Rye well, announces that he has refinanced his undertaking by disposing of gas rights on his acreage to a group of Memphis people. It is reported that these interests, whose identity has not been disclosed in information obtained to date, will finance three more wells in addition to Zuendt's Taylor No. 1 in the event the latter is a commercial completion and plan a $2,000,000 bond issue for a gas line from Monroe County to Memphis.

Moody & Seagraves, drilling No. 1 Whitesides in Section 16-9-7, Lee County, recently acquired from J. P. Evans of Shreveport is reported to have had another, its third, show of oil at around 1,150 feet but did not consider it warranted a test and are arranging to set 6-inch casing at around 2,300 feet where it is in a sandy lime. Other developments in Mississippi are covered in the accompanying field report.

Failed to Respond

Magnolia Petroleum Co. will abandon No. 1 Stout Lumber Co. in Section 28-14-16, Ouachita County, about 8 miles southeast of Camden, at around 3,418 feet after several shows of heavy oil which failed to respond to tests, and several more salt water tests.

Palmer Corp.'s No. 1 White in Section 2-19-10, West Carroll Parish, which tested salt water in 16 feet of sand at 2,450-66 feet, has resumed drilling and was last reported as having cored a soft gas rock at 2,483 feet which evidently did not develop much of a show as it is drilling at 2,503 feet.

Including the Benson Oil Co.'s DeSoto Parish wildcat, there were five wildcat completions in Shreveport territory during the week, one of the other four being a gasser in Bossier Parish making 3,840,000 feet of gas with a spray of salt water. It was H. S. Goodwin's No. 1 Curtis in Section 2-16-13 about midway between Shreveport and Elm Grove production. Producing from a total depth of 2,604 feet it is the first commercially successful well in that particular locality, although there have been a half dozen or so tests which showed for commercial gas but failed to pay off in the end, and is regarded as proving an extension east across Red River of the old Cedar Grove, or Harts Island, gas field which flourished for a short while in

(Continued on Page 221)

THE FISHER GOVERNOR CO.

WISHES

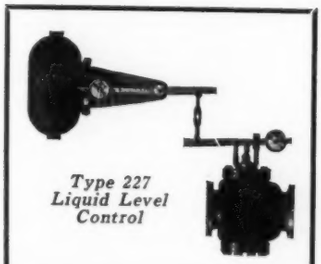
THE PETROLEUM INDUSTRY

A

NEW YEAR OF PROSPERITY

FISHER SPECIALTIES

Pump Governors
Gas Regulators
Reducing Valves
Liquid Level Controls
Vacuum Regulators
Gasoline Traps
Relief Valves
Fluid Mixers
Sample Heads
Steam Traps
Strainers



Type 227 Liquid Level Control

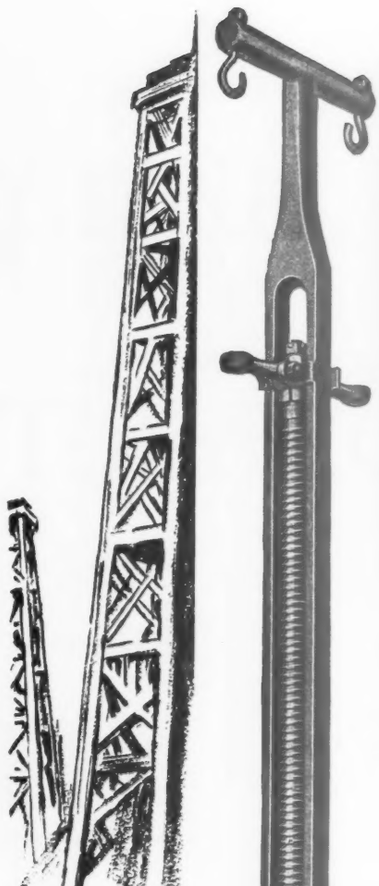
Type 210 Gas Regulator

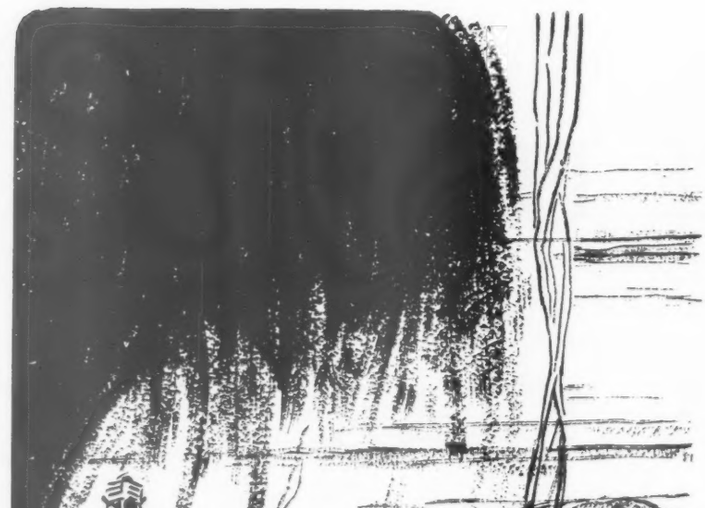
OUR NEW CATALOGUE DESCRIBES THIS EQUIPMENT

THE FISHER GOVERNOR CO.

404 FISHER BLDG.

MARSHALLTOWN, IOWA, U. S. A.





In *every field*

You will find the Burns Tubular Temper Screw carried in stock by supply stores in every field throughout the world.

Only a tool that is right, could win such a demand. Its use will be one of your most economical investments.

Be sure you get genuine Burns parts for replacement, then you will be assured of continued satisfactory operation.

TEMPER BURNS SCREW

Ball retaining type washer keeps balls in place

BURNS *Tool Company*

OKMULGEE • OKLAHOMA

Gulf Coast Production Shows Decline

Hull Field Has Best Completion of Week, an Old Well Deepened. Spindletop Had Only One Producer of Size

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Dec. 26.—With no important new production being added the past two weeks, the output of Gulf Coast fields again is on the decline. A drop of 6,971 bbls. in the daily average was recorded the past week. Spindletop, which has been almost inactive as far as completions for two weeks, was responsible for a loss of 2,762 bbls. in the daily average while Pierce Junction and Blue Ridge in Texas and Lockport in Louisiana were among the other substantial losers.

Since the middle of November Gulf Coast production has been advancing sharply. A series of good producers, chiefly at Spindletop, marking a comeback for that field with the development of the new deep sand extension, swelled the output of the district as a whole to 145,008 bbls. daily on December 17. Since then the production has dropped until Saturday it was only 137,937 bbls.

During the past week only one producer of any size was added to Spindletop, that being Gulf Production Co.'s No. 6 Jack & Duff, which came in making 1,000 bbls. daily from sand at 4,873 feet. The previous week no new wells were reported at Spindletop. With the failure of constant addition of new production, Gulf Coast fields reflect declines.

Hull Field Has Biggest Well

The Hull Field of Liberty County yielded the Gulf Coast's biggest well of the week, when Gulf Production Co.'s No. 43 Phoenix Development Co. found a deeper sand and came in flowing at the rate of 2,100 bbls. at 3,124 feet. This is an old well, which originally found production around 3,000 feet, but which the Gulf started working over early in December and deepened to its present level.

Only three other small wells were reported completed during the week, two being at Spindletop and one at Edgerly, Calcasieu Parish, Louisiana. A small gasser was reported at Markham. Fourteen tests were abandoned. Among the latter was Rycade Oil Corp.'s No. 19 Wisdom at Nash Dome, Fort Bend County, which hit the salt at 3,125 feet. Nash Dome is a dome being prospected exclusively by the Rycade Oil Corp.

Also of interest among the abandonments was Gulf Refining Co.'s No. 7 Lutcher-Moore Lumber Co. on the north flank of Starks Dome, Calcasieu Parish, Louisiana, which tested salt water at 5,212 feet. Three weeks ago Gulf abandoned a test on the southwest flank of the dome, the test being No. 8 Industrial Lumber Co. No. 9 Industrial, the only remaining drilling test there, is drilling below 3,300 feet. Production at Starks Dome still is from only three wells, all on the north flank on the Lutcher-Moore property. They made a daily average of 374 bbls. of net oil the past week.

Harrison Oil Co. also failed to make a well of its No. 2 Jones at North Dayton, Liberty County, Texas, which was deepened to 2,450 feet. This well was brought in during November pumping 50 bbls. of pipe line oil and was thought to have opened a new shallow producing sand around 1,600 feet. But, the well soon went to water and was deepened to its present level.

At Sweet Lake, Cameron Parish, Louisiana, which came back in the limelight the previous week when Pure Oil Co. revived production in its discovery well, No. 3 Sweet Lake, at present the only producing well in the field, has two more tests drilling each of which is about 5,200 feet deep. Production in No. 3 is at 5,897 feet.

Rains Handicap Operations

Operations in many coastal fields have been more or less at a standstill the past week because of rains which have handicapped the movement of equipment and material. Some districts have been under water and access to the various properties impossible. Many companies also are waiting until after the holidays and the opening of the new year before putting into operation various development programs and most offices at Houston have been virtually inactive all week. Apparently no work is being done either in fields or office, except that which actually has to be done.

As previously mentioned daily average production in coast fields of Texas and Louisiana, excluding southwestern Texas, was 137,937 bbls. the past week as compared with 145,008 bbls. the previous week. This was the first week since the middle of November that a decrease has been shown. A decrease also was reflected in East Central Texas fields although Southwest Texas fields increased 1,454 bbls. in the daily average. Daily average production by fields in each district for the week ending December 24 was:

Gulf Coast	
Spindletop	53,796
Saratoga	1,097
Batson	1,248
Goose Creek	7,630
Sour Lake	3,773
Hull	12,816
Big Creek	2,134
Columbia	8,835
Humble	3,731
Pierce Junction	11,992
Blue Ridge	4,357
Markham	250
Orange	4,270
Damon Mound	900
Dayton	282
South Liberty	1,990
High Island	157
Moore's Field	41
Boling	2,225
Nash Dome	1,335
Barbers Hill	650
Vinton	4,545
Starks	374
Edgerly	2,398
Evangeline	1,139
Lockport	4,985
Sulphur	...
Sweet Lake	325
Hackberry	595
Total this week	137,937
Total last week	144,908
Decrease	6,971
East Central	
Mexia	8,633
Cedar Creek	1,040
Nigger Creek	1,250
Currie	548
Wortham	2,330
Richland	650
Powell	13,091
Total this week	27,572
Total last week	27,942
Decrease	370
Southwest	
Somerset	2,245
Lytton Springs	1,580
Dale	485
Luling	14,780
Miscellaneous	8,210
Total this week	27,300
Total last week	25,846
Increase	1,454

Austin County

Humble Oil & Refining Co.'s No. 2 Gotosky, Raccoon Bend, Austin County, is drilling shale and lime at 2,008 feet. Humble also is ready to start drilling in its No. 1 Stravoski, also at Raccoon Bend.

Brazoria County

Gulf Production Co.'s No. 3 Perry, Stratton Ridge, is drilling at 3,903 feet. Humble Oil & Refining Co. still is fishing and cleaning out hole in No. 4 Coon, West Columbia, preparatory to deepening the well.

At Allen Dome, Roxana Petroleum Corp.'s No. 1 Allen at Bernard made two small heads of oil amounting to about 28 bbls. in the 24 hours ending Friday morning. This is the well which Roxana has been working on for the past two weeks in an attempt to make a producer. The test is in a sand at 5,337 feet. On the same dome, Roxana's No. 4 Allen is reaming at 4,424 feet. Total depth of the hole is 4,868 feet. No. 1 Random is drilling shale and lime at 4,395 feet.

Roxana's No. 2 Bell, on Clemens Dome, Brazoria County, is drilling shale and lime at 4,910 feet.

Chambers County

At High Island, Chambers County, Gulf Production Co.'s No. 2 Smith is drilling at 3,750 feet. McLean Oil Co.'s No. 10 Cade is drilling below 3,900 feet while No. 11 is down 3,282 feet.

Humble Oil & Refining Co.'s No. 5 Meyers is the only actively drilling test at Barbers Hill at this time, with the recent completion and abandonment respectively of two tests by the Humphrey's corporation. The Humble test is down 3,257 feet where 4½-inch liner and screen is being set for a test.

Pure Oil Co. has made a location for another test in the Lost Lake district. This will be No. 1 Cutoff, Bayou (State permit), 144 feet east and 85 feet north from the NW cor. of the John Dorsett Survey, and 15 feet south of the north bank of the bayou. Pure's No. 1 Lost River is down 2,480 feet where it is shut down temporarily waiting fuel.

Operations in the Lost Lake district are handicapped because of the flooded conditions of the district due to recent rains. The company has three other locations there, staked several months ago.

Colorado County

Carl Milentzhas (F. E. Waldrop) staked a location for No. 1 Auerbach, Colorado County. This is on the D. Gilliland Survey, 1,200 varas from the west line, 700 varas south of the river and 1,150 varas north of the railroad. Rich Oil Corp.'s No. 1 von Rosenburg fee and B. A. Johnson's No. 1 Breeding are the only two other tests in the county.

Fort Bend County

At Nash Dome, Rycade Oil Corp.'s No. 19 Wisdom hit the salt at 3,125 feet and was abandoned during the week. No. 19 Wisdom also tested salt water at 3,998 feet but this test is to be deepened. Screen now is being pulled preparatory to deepening. No. 20 Wisdom, however, has encountered an oil sand at 3,958 feet and preparations now are being made to set 6⅝-inch casing at 3,928 feet in order to bail and test. No. 20 Wisdom is drilling tough gumbo at 2,284 feet. Rycade is the sole operator at Nash Dome.

At Blue Ridge, Fort Bend County, Cunningham Production Co. has abandoned No. 3 Blakely after coring salt at 3,280 feet. H. R. Cullen's No. 1 Blakely at Blue Ridge was being bailed as the week closed. It is at a total depth of 3,625 feet. This district also figured during the week when Gordon, Folwell & Dickson's No. 3 Blakely blew out while drilling around 2,500 feet and caught fire and wrecked the derrick. The test, however, soon sanded up and a new derrick is being built for deepening the hole. No estimates were made as to the amount of gas in the blowout and with the gas was a quantity of fresh water. Gulf Production also is moving in a rig to deepen its No. 11 West Schenck. Its No. 13 on this lease is drilling at 3,661 feet. Navarro Oil Co. has started drilling in its No. 4-A Robinson and is down around 300 feet. Sam Watts and associates have a rig up for No. 2 Blakely and drilling will be started in a few days.

At Moore's Field, Gulf Production Co. is drilling at 3,663 feet in No. 14 Moore.

Gulf Production Co.'s No. 34 Davis at Big Creek, also in Fort Bend County, is drilling at 2,836 feet. This is an old well being deepened. No. 44 Davis, a new well, is drilling at 3,980 feet.

Gulf has rigs up for two new tests at Long Point in the same county. These tests will be the No. 6 Trone and the No. 7 Woolf. No. 2-A Beard at Long Point is drilling at 3,722 feet.

Humble Oil & Refining Co. has rigged up for No. 1 Sugar Land Industries, Inc., at DeWalt but drilling is delayed pending laying of a gas line to the location to provide fuel.

Hardin County

At Batson, Hill & Dowell have abandoned their No. 95 Millhome after drilling to 1,675 feet. The test was dry at that depth. Adabel Oil Co. is bailing its No. 117 McGoldrick-Stateland, also at Batson. The latter has an oil sand at 1,180 feet. Another Batson test, Capitol Oil Co.'s No. 9 Hodges, has strainer set and is being bailed, its depth being around 3,900 feet. Deutser Oil Co.'s No. 1 Colorado-Batson Syndicate is drilling below 1,460 feet.

Gulf Production Co.'s No. 13 Tabor at Saratoga, Hardin County, is drilling at 1,316 feet. Regna Oil Co. is bailing No. 2 Teel in the same field, it having a sand at 1,550 feet. Rio Bravo Oil Co.'s No. 104-D tested salt water at 1,840 feet but is to be deepened. Sun Oil Co. is drilling below 2,150 feet in No. 137 M. & M.

At Sour Lake, Gulf Production Co. has a rig up for No. 3 H. A. Thomson, while Orange Petroleum Co. is drilling around 4,460 feet in its No. 4 Merchant.

Harris County

Anderson & Plummer are drilling below 2,150 feet in their No. 2 Whitehead at Pierce Junction. H. R. Cullen and associates' No. 4 Howe is drilling around 3,056 feet. Gulf Production Co.'s No. 1 Perry is drilling at 5,166 feet, its No. 22 Taylor at 4,663 feet and its No. 23 Taylor at 2,834 feet. Hutex Oil Co. is drilling around 2,750 feet in its No. 1 Prather. Moody & Seagraves have a derrick up for No. 3 Hume (Reid) and now are engaged in setting up a rig. These operators also have completed derricks for No. 1 Cooper and No. 2 Whitehead. Navarro Oil Co.'s No. 2-B (formerly No. 4) Cain is drilling below 2,550 feet. Rio Bravo Oil Co.'s No. 7 P. S. A. is down below 4,050 feet and its No. 2 G. H. & S. A. is drilling below 800 feet having started operations the past week. On the latter property, the Galveston, Harrisburg & San Antonio (Southern Pacific) Railroad right of way, Rio Bravo's No. 101 is drilling below 4,550 feet. Sun Oil Co. is drilling around 4,600 feet in No. 1 Fitzsimmons.

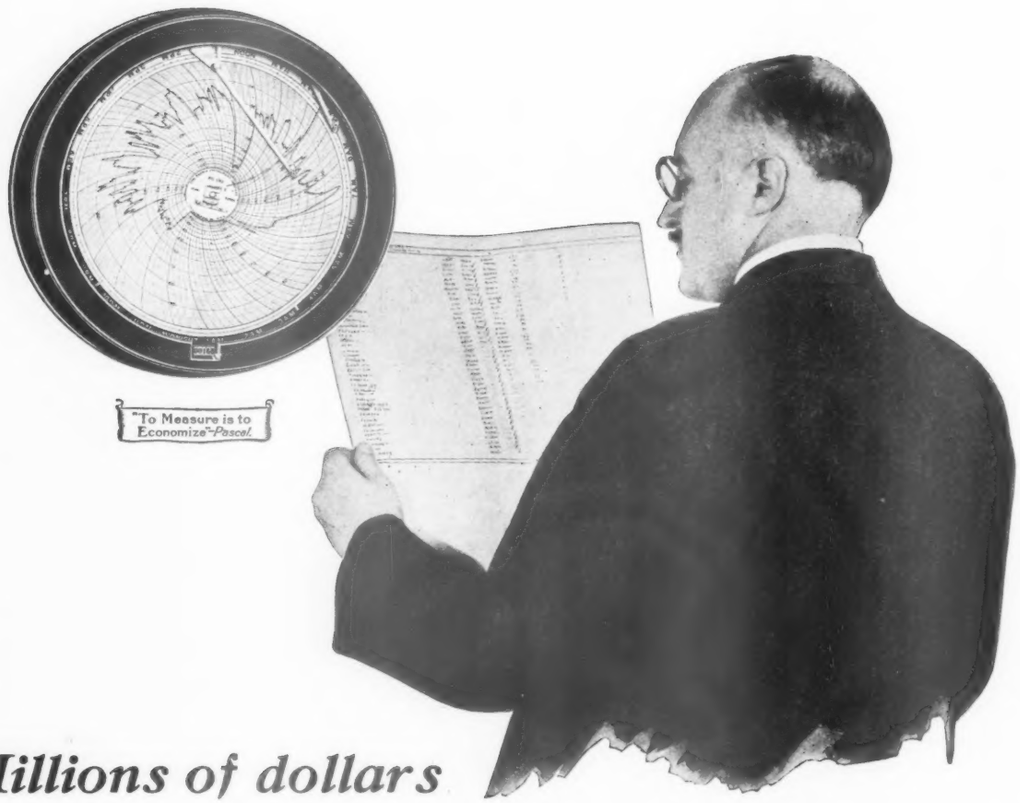
Gulf Production Co.'s No. 18 Hoffman-Gaillard at Goose Creek is drilling sandy shale at 2,776 feet, while its No. 21-A Wright is in gumbo and lime at 2,875 feet. Humble Oil & Refining Co.'s No. 73 Simms-Smith, also at Goose Creek, is drilling shale at 4,018 feet. Its No. 4 Ashbel Smith is fishing 6-inch liner at 2,485 feet. Port City Oil Co. is drilling below 1,820 feet in No. 1 Grace Addey.

Humble Oil & Refining Co.'s No. 2 Warren at Hockley is drilling hard sand at 3,316 feet.

Jefferson County

Gulf Production Co. has completed its No. 6 Jack & Duff at Spindletop, Jefferson County, flowing 1,000 bbls. of oil daily from sand at 4,873 feet. Yount Lee Oil Co. also has two completions, No. 39 McFaddin, a workover, making an initial production of 125 bbls. of 31.5

(Continued on Page 217)



Millions of dollars in coal and oil burned by refineries yearly . . . Much of this can be saved!

You do burn a lot of gas and heavy ends that don't count, that's true—but records show, too, that millions of dollars worth of COAL and FUEL OIL are burned yearly under oil refinery boilers.

Millions of dollars worth . . . and a huge part of it WASTED for lack of proper boiler room instruments. While stills and towers are equipped with the necessary instruments, boiler house operators are only too often obliged to run by guess.

It has been estimated that in the average steam plant an installation of Brown Electric Flow Meters pays one hundred times its cost.

5 EXCLUSIVE ADVANTAGES

1. Inductance Bridge Circuit.
2. Automatic Planimeter Record.
3. Inherently independent of voltage fluctuations.
4. No electrical parts in pressure chamber. No mechanical parts going out of it.
5. Double-range Manometers.

Think this over.

Write for details, and Catalog No. 20. The Brown Instrument Company, 4412 Wayne Ave., Philadelphia, *Branch Offices in 18 Principal Cities.*

Measure steam, water, gas and oil

Brown Electric Flow Meter

on the Inductance Bridge Principle

New Producer in the Maljamar Field

Drilled Few Feet Deeper Makes Over 200 Bbls. Oil Found Standing in Boulder, Colo., Well. Iles Dome Active

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Dec. 24.—A new producer in the Maljamar area in eastern Eddy County, New Mexico, proved the most important development of the week in the Rocky Mountain area. The Texas Production Co.'s No. 2 Robinson, Section 25-16-31, came in for 1,500,000 feet of gas and 75 to 100 bbls. of oil at 4,007 feet, and quantity of oil increased to between 200 and 300 bbls. upon being drilled a few feet deeper. Another development in Eddy County was the showing made in a swabbing test in the Getty Oil, Inc.'s No. 1 Hinkle, 10 miles southeast of Artesia. It put 234 bbls. into the tank in the first 24-hour period. One abandonment, Hogback Oil Co.'s No. 1, was reported in McGinley County, and in San Juan County, three wells which have been delayed for long intervals, are nearing the completion stage.

The Essok Oil Co.'s No. 1 Martin, near Boulder, was the most interesting development of the week in Colorado. Oil was found standing in the hole 500 feet off bottom from a total depth of 5,225 feet when the drillers were running casing, and it is believed the oil, which is dark green and 41 gravity, is coming up from below. Operations are expanding on the Iles Dome in Moffat County with the Midwest starting three new wells, the Texas Production Co. moving in four new rigs, one new well spudding and a new location announced. The Midwest Refining Co. will ship its Iles production to Salt Lake City when pipe line is completed. The Northeastern Colorado Oil Co.'s Logan County test has resumed drilling as a result of new financing. The Kinney-Coastal Oil Co.'s new Huerfano County test has commenced spudding. Florence has a 150-bbl. well in the south extension.

Wyoming Associated Oil Co. had two completions in Salt Creek, one for 42 bbls. and the other for 20 bbls. Teapot Dome wells are being plugged by the Navy Department, and two new operations by the Ohio Oil Co. and the Somir Petroleum Co. are being started in the Hiawatha area in Sweetwater County.

The Boundary Butte test in southeastern Utah, the subject of litigation with the Government and congressional relief, is making new hole for the first time in two years.

New Mexico

The Texas Production Co.'s No. 2 Robinson, NW cor. SW, Section 25-16-31, eastern Eddy County, in the Maljamar area, is the week's sensation in New Mexico. The well is located a little less than half a mile west of the same company's No. 1 Robinson, NE SW, Section 25-16-31, which came in several months ago for 8,000,000 feet of gas and 5½ bbls. of oil at 3,885 feet. No. 2 Robinson had a show of gas at 3,847 feet and a show of oil at 3,860-70 feet. This was about the horizon at which results were expected and the outlook had become rather discouraging. The situation was completely changed when at 3,985 feet the bit penetrated a soft gray sand. It commenced showing some gas and oil at 4,007 feet, making approximately 1,500,000 feet of gas and between 75 and 100 bbls. of oil. Advices this morning state that when drilled a few feet deeper, the flow of oil increased to between 200 and 300 bbls. a day. It looks like a real well and goes a long way towards confirming the belief that the Winkler County, Texas, folding trends more towards the northwest in the direction of the Maljamar Pool in Eddy County.

This area is scheduled for a big play the coming spring and every well completed, regardless of results, helps to give a better lineup on the conditions. The surface conditions are such that it is difficult to work out structures and the principal companies have been using geophysical instruments to a very large extent in locating the highs. No. 2 Robinson is approximately 50 miles northwest of the Texas Production Co.'s No. 1 Rhoades, NE NW, Section 22-26-37, in Lea County, just north of the Winkler County, Texas, line, completed a few weeks ago at 3,213 feet with a production of 23,000,000 feet of gas and 25 bbls. of oil. The Rhoades well was then shut in. The past week it was opened up for a test and gauged 26,000,000 feet of gas and 120 bbls. of oil. The nearest drilling well to the No. 2 Robinson is the Pueblo Oil Co.'s No. 1 Gessert, NW NW, Section 1-17-31 in Eddy County, which is shut down at 3,705 feet waiting for 8¼-inch casing. It had some gas at this depth which blew the tools 30 feet up the hole where they lodged and necessitated a fishing job.

Big Well Extended

Running parallel with the Robinson well in interest is Getty Oil, Inc.'s No. 1 Hinkle, NE cor. Section 23-20-69, in the Twin Hills district 10 miles southeast of the Artesia Pool. The well has been given a swabbing test from a total depth of 1,368 feet and swabbed 234 bbls. the first 24 hours; 146 bbls. the second 24 hours; and 141 bbls. the third 24 hours. Each time it was swabbed down. A string of 3-inch tubing is being run and the well will be allowed to flow. The oil tests 21.4 gravity. This well is 500 feet south of a test drilled by the same company in which the hole was lost, but which was believed to be good for 25 to 30 bbls. in a second horizon, compared with 1 bbl. per day in the first. If the Hinkle well shows proportionately as good in the second horizon as in the first, a big well may be expected. There is considerable activity in lease trading reported.

It is said that the Getty interests have acquired 2,240 acres at a reported price of $229,000, most of which is around the Hinkle well, but some of it runs back for a distance of 2 miles. This firm will drill three more tests in the vicinity of the Hinkle well at once. One of these has been located and will be known as No. 1 Nicholas, on the Ada Nicholas permit in the NW NW, Section 25-20-29. The geological work for Getty was done by Sam Marshall, of Los Angeles, Calif. R. D. Compton's No. 4 Mann, SW NW, Section 4-18-27, is cleaning out at 1,320 feet to set the 8¼-inch casing at 1,340 feet. Hammond Oil Co.'s No. 1 Miller, Section 15-16-25, is drilling in black lime at 1,380 feet. Hamilton Petroleum Co.'s No. 1 Billings, Section 13-19-26, is shut down at 2,306 feet. Levers & Carper's No. 5 State, Section 3-18-28, is drilling in lime at 2,296 feet and had a show of gas at 2,290-96 feet.

Lea County

In Lea County, the Cecil Bordages' No. 1 Hughes, Section 27-19-38, is drilling at 610 feet in red shale. Midwest Refining Co.'s No. 1 State, Section 9-19-38, is drilling in red shale at 1,130 feet and carrying the 1½-inch close behind the bit on account of cavy ground. This is the next test from which important results are expected as the Hobbs high, upon which it is drilling was located not only by geological mapping after considerable pit digging, but also by the use of the torsion balance and magnetometer. Henderson, Dexter & Blair's No. 1 Wyatt, SW SW, Section 34-17-33, is being swabbed to clean preliminary to shooting. Total depth is 5,373 feet and 40 quarts will be shot in the three sands found in the test. Maljamar Oil & Gas Co.'s No. 2 Beardsley, SE NE, Section 15-17-32, is drilling in lime at 3,947 feet. Inglefield & Bridges' No. 1 State, SE cor. Section 4-17-34, flowed a total of 60 bbls. in the first week. Fishing for bailer is in progress.

The only operation in Chaves County that is active is the Arena Oil Co.'s No. 1 Wilkins, Section 18-13-31, which is bottomed at 720 feet and underreaming the 12½-inch from 412 feet to the bottom. The Buffalo-Roswell Oil Co.'s No. 1 state, Section 24-11-27, was shut down by the drilling crew at 4,260 feet, and the company is reported to be out of funds.

In Quay County, the Ohio Oil Co.'s No. 1 Sam Wells, SW cor. Section 24-7-29, in the Jordan Ridge district, is drilling at 4,668 feet.

Rattlesnake Dome

In the northwestern area, the Continental Oil Co.'s No. 17, Section 2-29-19, on the Santa Fe company's lease on the Rattlesnake Dome, in San Juan County, is again making new hole after having been held back for a year by one trouble after another at 3,785 feet. It is now drilling at 4,005 feet, and again becomes an interesting test as it has passed up 2,500 bbls. production in the Dakota to test the Pennsylvanian. It is now supposed to be within a few hundred feet of the objective. The Union Oil & Mining Co.'s No. 2 Pine, Section 8-29-9, in the Blanco district, after a bad fishing job which has delayed progress for a year, has recovered two strings of tools and expects to have the third out within a few days. The well is bottomed at 2,950 feet. The well has been making some gas and occasionally spraying a little oil ever since the fishing job began. The Huntington Park Oil Co.'s No. 1 Terwilliger, Section 29-30-9, in the Blanco district, has landed the 5⅜-inch casing on bottom at 4,150 feet and is cleaning out preliminary to drilling into the Mesa Verde from the top of which it is making a little gas. The T. C. N. Oil Co.'s No. 1 Lanier, near Aztec, which has been supplying that town with gas, went off production this week, and an investigation showed that a little water had broken in through defective casing. While this is being remedied, gas for the town is being taken from some old wells.

In McKinley County, the Hogback Oil Co.'s No. 1, SE NW, Section 12-16-10, is being plugged and abandoned. Total depth was 2,350 feet. Water was encountered at 2,290 feet and hole was full of water when drilling stopped. The Continental Oil Co.'s No. 1, Section 9-17-7, Carica Dome, is drilling at 2,849 feet.

Colorado

The surprise for the week in Colorado was in the Essok Oil Co.'s No. 1 Martin, NW SE Section 5-1s-70, on the Parallel Dome, in Boulder County, just south of the old Boulder Field. When the Repollo Oil Co.'s No. 1 Deines, on the NE NW Section 33-1n-70, ran out of hole at 4,730

(Continued on Page 232)

TWO ENCOURAGING OIL SHOWINGS ON DE WINTON STRUCTURE NEAR CALGARY

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Dec. 24.—On the De Winton structure south of Calgary, Anglesey - Lakeview's No. 1, LSD 1, Section 22-21-1w5, being drilled by the Marquis of Anglesey, is reported to have encountered two encouraging oil showings in the recent drilling. The Marquis of Anglesey has given out the following statement:

"The Anglesey-Lakeview No. 1 is drilling at a depth of 1,877 feet and satisfactory progress is being made. A further showing of heavy crude has been encountered this week. The analysis of the oil from the sand at 1,400 feet was as follows: Gravity, 14.6 Baume; carbon, 87.7 per cent; distillation test, first drop at 506 degrees Fahrenheit; kerosene content, 18 per cent. The oil is a mineral oil showing strong paraffin base properties. Drilling will be suspended over the Christmas holidays, and work will be resumed early in January."

The first oil horizon extended from 1,400 to 1,600 feet with sand and hard shale throughout. It is estimated that from this sand the well had a potential production between 10 and 20 bbls. a day, though the hole was not cleaned out for a test. At the 1,877-foot horizon the showing was smaller. A small quantity of gas was present. The structure at the bottom of the well is comparatively flat, and it is thought the oil so far encountered has migrated from a larger body at somewhat lower depth. Lord Anglesey, who recently visited the well, has left for England, accompanied by J. F. B. Kitson, who will return in January to superintend further operations. It is understood that No. 2 well will be started next spring, whether or not No. 1 gets commercial production; though the location for No. 2 will be guided to some extent by results secured in No. 1.

Turner Valley Field

In the Turner Valley Field, Illinois-Alberta Oil & Refining Co.'s No. 1, LSD 14, Section 12-20-3w5, for the week ending December 10 showed a production of 745.2 bbls. of crude naphtha, a daily average of 106.4 bbls. Illinois-Alberta's No. 2, same LSD, is drilling at 1,052 feet with the hole in good shape.

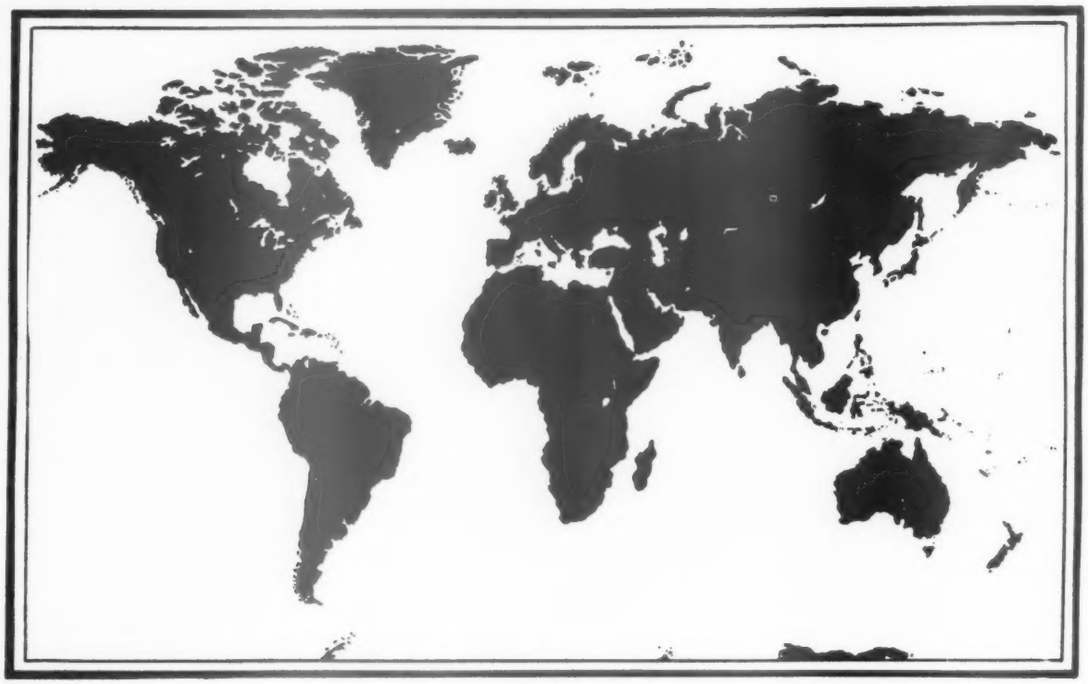
New McDougall-Segur Oil Co.'s No. 2, LSD 14, Section 12-20-3w5, is reported making between 50 and 60 bbls. a day of light crude from the Dakota sand at 2,646 feet. New McDougall-Segur's No. 3, same LSD, is rigging up for another test of the Dakota sand.

McLeod Oil Co.'s No. 3 LSD 16, Section 1-20-3w5, is reported making an average of 32 bbls. a day of light crude from the Dakota sand at 3,280 feet. McLeod's No. 1, same LSD, has resumed drilling after replacing the outfit destroyed by fire some weeks ago. The test is now drilling at 3,105 feet.

Stockmen Oils' No. 1, LSD 1-2, Section 27-20-3w5, has entinguished its burning gasser, and is now getting the well under control. The flow is around 3,000,000 feet a day of wet gas. To extinguish the fire, a roof of tin sheeting was erected

(Continued on Page 217)

To the 4 Corners



IT MAY be assumed that any item of merit with a far-flung organization behind it can be sold to the four corners of the earth.

But PELCO products have no such organization behind them. They even lack the advantage of any difference in appearance or design from products of a thousand shops in a thousand fields.

The fact, then, that men to the four corners of the earth BUY Pelco products has a significance for your own interpretation. To assist you in this we will gladly send illustrated literature containing a few pertinent paragraphs about heat treatment entitled Damascus to Date.

FREE

To remind the initiated that a PELCO Fishtail Bit is a modern miracle for hardness and toughness at one and the same time, and to intrigue the uninitiated and perhaps plant a small seed of desire, we will send to any address upon application a miniature PELCO Bit watch fob, cleverly emblematic of the greatest of all industries.

Pelican Well Tool & Supply Co.

GOOD PEOPLE TO DO BUSINESS WITH

Shops and General Offices
Lake & McNeil Streets, Shreveport,
Louisiana, U. S. A.

M. Ind. Rgtrda. PELCO Reg. U. S. Pat. Office

Branches at Haynesville, La.
Smackover, Ark., Norphlet, Ark.
Shops at Haynesville, La.

Substantial Gain Due in California

Long Beach Deep Zone Shows Lack of Uniformity in Initial Production. Importance of Shut-Off Point

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Dec. 24.—With 1927 rapidly drawing to a close the industry is minutely watching developments in the Long Beach Field as the exploitation of the deep sand in this district is expected to be manifested in a very perceptible increase in production during the first three or four months of 1928. Daily production of this field is up approximately 25,000 bbls. since the first part of October and present indications point to the possible attainment of a peak ranging somewhere between 150,000 and 175,000 bbls. per day along around April or May. The increase in production during the past few weeks has been rather gentle but the anticipated completion of a number of new wells early next year should send production curves upward at a considerably faster rate. The increase in production expected to occur at Long Beach will naturally be reflected in the total state production and consequently the latter should also register a substantial gain during the early part of 1928. Seacliff, Ventura Avenue, Kern River, Seal Beach and one or two other fields should also show an increase over present production due to additional drilling and California's daily output is therefore destined to shew a substantial gain at least during the early part of 1928.

Deep Sand Completions

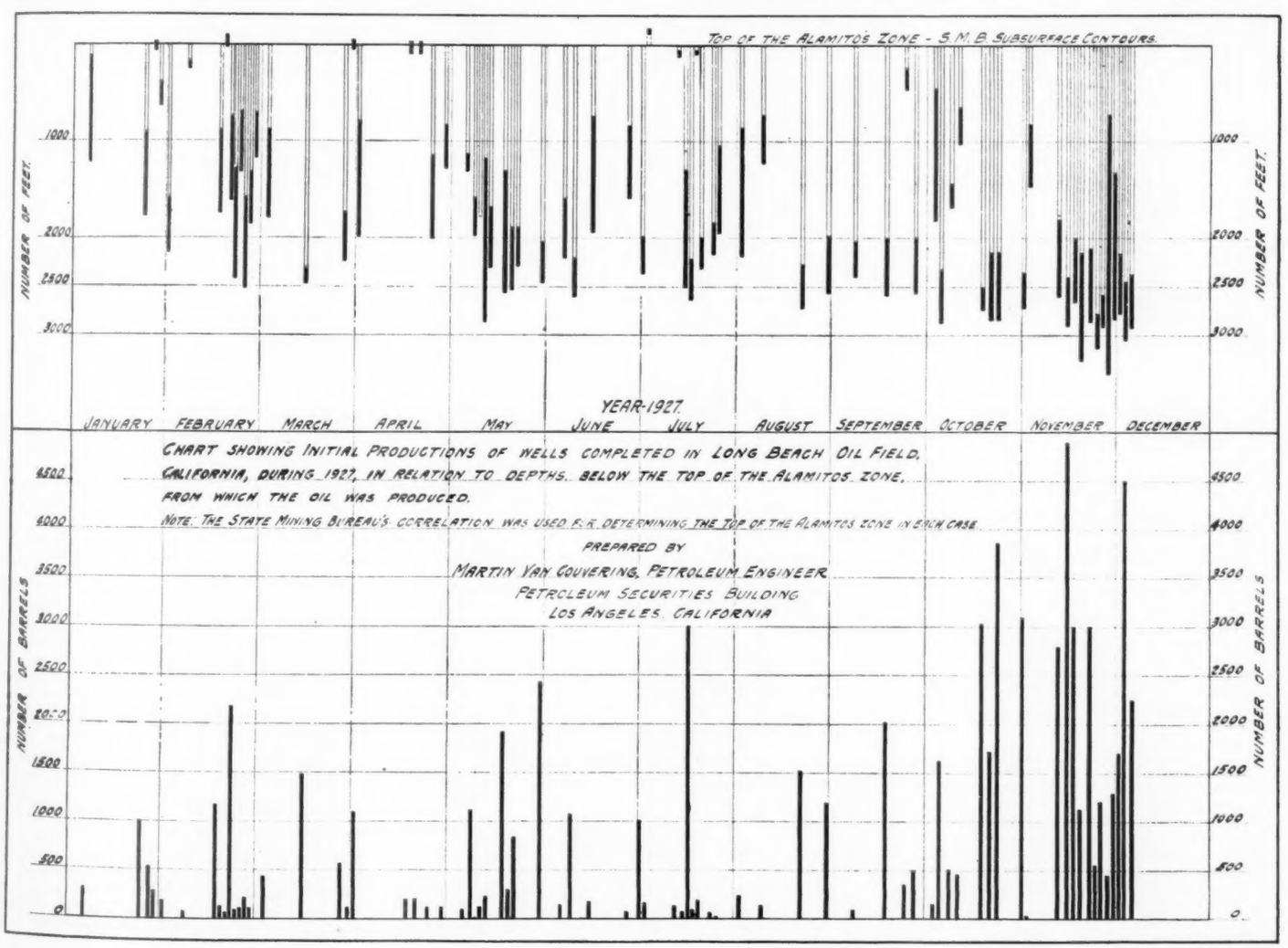
Deep sand completions in the Long Beach Field during the past few months have been especially conspicuous by their lack of uniformity in point of initial production and this unusual factor has caused prognosticators considerable difficulty. The failure of several wells in proven territory to come up to expectations has caused many to wonder if the potentiality of the lower zone has not been overestimated. A careful check indicates a number of variable factors involved and unless due consideration is given to each contributing agent only a part of the picture is seen. Completion charts show that there is no definite constant ratio between penetration in the oil sand and initial production, as a minute survey indicates that not all wells having a maximum pentration in the lower zone have resulted in large production. As a matter of fact, the largest recent completions show only a relatively small penetration. This peculiar state of affairs has resulted in considerable speculation among geologists and subsurface engineers lately and it might not be amiss at this time to caution operators against promiscuous drilling on the assumption that the initial flush production of new wells depends wholly and entirely upon the pentration secured in the deep sand.

All things being equal it is almost axiomatic that wells having a deeper penetration in the oil bearing formation will register a proportionately larger production that those finished higher up. This condition has been voided by a number of other factors at Long Beach, however, and too much stress cannot be laid on the necessity of independent operators securing competent geological and engineering advice as this small expenditure will many times mean the difference between large and small production. After a very careful survey of deep sand drilling in the Long Beach Field I have come to the conclusion that operators are not devoting enough attention to the shutoff point. In other words, a large number are merely striving for maximum penetration without giving due consideration to a number of other very important factors and unless this condition is remedied future completions will continue to show considerable variation in initial production. This lack of uniformity is exceptionally marked and very conspicuous. There is a very definite tendency on the part of independent operators, and this includes some of the larger companies also, to cement too high up in the hole. There is concrete evidence to support the theory that the small initial production registered by a number of recent completions scheduled for big production is due to this practice. Many recognized authorities on this field confirm this opinion and while the State Mining Bureau may be without jurisdiction in the matter it would not be surprising if that organization called attention soon to the descrepancy existing in shutoff points below the top of the Alamitos zone.

A chart indicates very graphically that the initial production of lower zone completions does not depend primarily upon the amount of penetration taken as some of the largest producing wells are only drawing from a limited amount of oil sand. A little closer study will reveal the very marked lack of uniformity in the cementing point, which in most cases will be just above the top of the perforated casing indicating the penetration in the oil sand.

Tanker Shipments

Tanker shipments of California petroleum to foreign ports have been exceptionally heavy during the past several months and with state production due to show a substantial increase early in 1928 it seems almost a foregone conclusion that tanker movements will also be higher. The Shell company contemplates a very substantial gain in tanker shipments during 1928 and the recent mar-



keting deal between the Union and Atlantic Refining Co. should also result in increased liftings especially to the Antipodes. The Shell's increased loadings will not be limited to any specific area as sailings will be made to Australia, the Orient and European markets. The Standard of California will also reflect increased business and it is interesting to note in this connection that this company let contracts some time ago for two new 15,000-ton Diesel-driven tankers, both of which are listed for foreign trade. Both vessels are under construction at the Krupp shipyards at Kiel, Germany, and if everything goes along according to schedule the first will arrive at Los Angeles Harbor early in August. One of the most interesting developments in connection with the movement of California petroleum to foreign markets is the increasing demand for fuel oil. This commodity could hardly be given away during the early part of 1927 but liftings of this product have been quite numerous during the past few months and this brisk demand will undoubtedly continue well over into the new year.

Seacliff

Operators in the Seacliff Field of Ventura County are making exceptionaliy fast footage and with eight wells all within a few hundred feet of the projected depth at which the pay should be encountered another producer or two may be finished before the year draws to a close. The Pan American has four drilling projects near completion on the fee property and one of these, No. 3, may be drilled into the pay within a few days. The Chanslor-Canfield Midway Oil Co. has three drillers on Hobson Lease C, two of which should be in a position to make a bid for production soon. The Miley Oil Co. picked up the shallow tar sand in No. 1 H. & H. at 2,643 feet and the hole is now being reamed preparatory to landing a water string. No. 2 on the same lease is within a few hundred feet of this depth and casing in this hole will probably be landed immediately upon conclusion of similar work in No. 1. The General Petroleum Co. has two wells actually under way in the Seacliff Field, one on Hobson Lease A and another on the Tomson property, both of which have just passed the 1,000-foot level. If the Seacliff Field lives up to the expectations it should be doing at least 5,000 bbls. per day before February 1.

Long Beach

New work continued to feature drilling operations in the Long Beach Field during the week and the several new spuds made will be augmented by another group within the next 10 days. There are 188 new wells and deepening projects actually headed down for the deep sand and indications are there will be 200 strings of tools in operation before January 1. Operators are making exceptionally good footage and completions will become more frequent early in the new year. Daily production will therefore continue its upward trend until the peak is reached somewhere along around April. The Shell company, discoverer of the Long Beach Field, is by far the largest single operator and will undoubtedly retain this distinction as several additional rigs are either already in course of construction or scheduled for early work. This company finished No. 2 Binkley in the deep zone at 5,901 feet during the week and this new producer, which is a recompletion after having been redrilled and deepened, registered an initial of 2,430 bbls. of clean 30.5 gravity oil daily. This well, which is flowing through a 1¼-inch bean under a pressure of 400 pounds, contains a total of 16,105 feet of casing, ranging from 16-inch to 4¾-inch. The large amount of pipe used is due to the fact that this rejuvenated well was a former upper zone producer and another string had to be landed when the deep sand was opened up. The Shell company has not gone in for very much redrilling work but it rather concentrating its efforts almost entirely on new holes. This policy appears fully justified as the company can produce from both the upper and lower zones at a minimum expense as new wells will drill entirely through the upper horizon and thus require only a limited amount of pipe. New holes also eliminate any duplication of pipe such as is necessary in a deepened project which requires the running of a new combination string down through the oil string in the upper zone. The Richfield's No. 9 Booth and No. 9 Haas, both finished last week, are holdling up exceptionally well and while there has been a slight dimunition in natural gas production the casinghead recovery has remained at 4 gallons to each 1,000 feet of natural gas treated. This concern spudded in two new wells and should have three potential deep sand wells on production within 10 days.

The California Petroleum Co. will make a very determined bid for deep sand production at Long Beach and the 12 strings it has in operation will be supplemented by several more shortly. The General Petroleum is also going after the lower prolific zone and this company, which has just finished No. 6 Boyer Kelly, should bring in another deep sand completion in the near future. The Pan American, Edens & Wallace, George F. Getty, Hope Oil Corp., George W. Johnson and two or three others also have potential deep sand wells nearing completion.

Ventura

There were no wells actually put on production in the Ventura Avenue Field during the week but there are about six potential producers scheduled for production shortly after the first of the coming year. This group is divided among the Associated, Petroleum Securities and Shell companies. The Shell's next completion looks like No. 18 Edison, which is rotating ahead in a good looking oil sand at 6,522 feet. Nos. 16, 17, 19 and 20 on the same property are several hundred feet shallower but the company is making normal footage and they should therefore come into production late in January. No. 24 on the Gosnell lease should follow No. 19 Edison into production. The Associated has two good looking wells in Nos. 44 and 50, on the Lloyd property scheduled for early completion. The Associated's No. 102 Lloyd in the extreme eastern part of the Ventura Avenue Field is probably one of the most interesting drilling projects under way. Correlations indicate it is a little higher on the structure than No. 101 which is nearer the apex of the anticline. Operators will show a keen interest in the initial production secured. The Petroleum Securities has three wells nearing completion on the Orton and Willett leases in the extreme southern part of the field and since the last two wells finished in this area were highly satisfactory this trio should boost the field production quite substantially.

Kern River

George F. Getty, who pioneered development work out along the west front of the Kern River Field a little over a year ago, chalked up two more excellent producers in this section. Getty's pioneer work was done on the Tegeler and Lehnhardt leases in Section 14-28-27, while his current completions are on the McDougal property in Section 26-28-27. The new producers added were No. 1 McDougal carried down to 2,084 feet and No. 8 McDougal finished at 2,181 feet. Both showed an initial daily production of 245 bbls., the oil testing 14.2 degrees. No. 2 McDougal picked up the top of the pay a few days ago and this well is scheduled to be drilled into production during the week. A check of the various other development work under way along the Kern front indicates the probable completion of four additional wells within 10 days. The Associated, Bishop Corp., Chanslor-Canfield Midway Oil Co., General Petroleum, St. Helens Petroleum, Whittier & Kent, Standard and Petroleum Securities are running 20 strings of tools along the west front and a large part of these drilling projects should be finished within 30 days as these 2,000-foot holes can be drilled from spud to production within a short time.

Round Mountain

The Honolulu Consolidated has inaugurated a rather comprehensive drilling program in the Round Mountain Field since taking over the holdings of the Elbe Oil Co., discoverer of this district. The Honolulu interests have three wells actually under way but material is being placed on the ground for five additional projects in Sections 18 and 20. The Shell has not yet undertaken any new work on its portion of the holdings acquired in the Elbe deal but No. 6, which was spudded in by the Elbe interests, is being carried down for a deep test. The St. Helens Petroleum, which recently completed two exceptionally large wells out on the Kern front, has temporarily suspended operations on its test in the Round Mountain Field, Section 13-28-29, at 3,795 feet. No definite intention of abandoning has yet been signified, although this is a probability as no showings of special importance were logged from the grass roots down. The Associated also suspended drilling operations on a deep test, No. 1 Harvey, in the Round Mountain Field, Section 34-28-29, during the week due to the unfavorable outlook. Development work in the Mount Poso Field is at a standstill due to the lack of pipe line facilities but drilling may be resumed in this area during the coming summer as it is believed the Shell will soon extend its Coalinga-Martinez line southward to Round Mountain via Midway-Sunset and Mount Poso, in which event operators

(Continued on Page 218)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, Well, Location—	S-T-R	Depth	Status
Associated, No. 1 Cypress, Potrero	34- 2-14	5,408	recemented
Smith & Carpenter, No. 1 Smith	35- 2-14	5,282	rebuild rig
Hurst Oil Corp. No. 1 Inglewood, Los Angeles Co.	28- 2-14	3,772	suspended
Mont. Park Oil Co., No. 1 Browning, Monterey Park	26- 1-12	3,170	hd. sd. drilling
Associated, No. 1 Patterson, Pico	13- 2-12	4,163	slight show
Circle Oil Co., No. 1 Pomeroy, Manchester	23- 3-14	4,280	suspended
Shell, No. 1 Mission, San Francisco	4- 2-15	4,985	hd. sd. drilling
Sou. Calif. Drlg. Co., No. 1 Matteson, El Segundo	1- 3-15	4,870	suspended
Carr, O. K. No. 2 Foster, San Juan Capistrano	13- 8- 8	4,230	suspended
Thomason & McCoy, No. 1 Rinz, Sangus	27- 5-16	1,610	suspended
Andrews, Otis, No. 1 Lancaster, Los Angeles Co.	23- 8-13	Rig	rigging up
Southwest Pet. Co., No. 1 Ramsauer, Watts	4- 3-13	4,302	suspended
Security Pet. Co., No. 1 Lynwood, Los Angeles Co.	13- 3-13	Rig	rigging up
San Clemente Oil Co., No. 1 Peck, Hawthorne	20- 3-14	5,536	recemented
Horowitz, R. R., No. 1 Hawthorne, Los Angeles Co.	19- 3-14	....	location
O'Donnell, J. E., No. 1 Dupree, Hawthorne	29- 3-14	5,304	suspended
White Behr, No. 1 Watson, L. A. County	21- 4-14	3,992	hr. sh. drilling
Shell, No. 1 Allec, Placentia	31- 3- 9	5,372	hd. sd. drilling
Buttrum, F. W., No. 1 Richfield, Orange Co.	36- 3- 9	Rig	rigging up
Son, C. A., No. 1 Pinkerton, Orange Co.	5- 5-11	3,620	suspended
Olympic Refg. Co., No. 1 Sunset Beach, Orange Co.	19- 5-11	Rig	rigging up
Getty, Geo. F., No. 1 Seal Beach, Orange Co.	14- 5-12	Mtl.	building rig
Stein, Leo, No. 1 Long, Orange Co.	21- 5-11	5,135	suspended
Shell, No. 1 Stern, Orange Co.	22- 5-10	2,900	hd. sd. drilling
Hement Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	1,715	hd. sd. drilling
Fuller & Gray, No. 1 Puente, L. A. County	14- 2-10	Rig	rigging up
Anchor Oil Co., No. 1 Hudson, Los Angeles Co.	19- 2-10	2,395	suspended
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	680	hd. sd. drilling
Pet. Securities, No. 1 Fairview, Orange	3- 6-10	4,311	hd. sd. drilling
Davenport O. & G. Co., No. 1 San Marcos, San Diego	25-12- 2	350	hd. sd. drilling
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	280	sd. drilling.

IMPORTANT NORTHERN CALIFORNIA WILDCATS

General Pet., No. 2 Ochsner, Kettleman Hills	26-22-18	5,518	br. sh. drilling
South Coalinga, Well No. 1, Kettleman Hills	35-24-19	2,930	pipe trouble.
Monocline Dev. Co., Well No. 1, Kettleman Hills	7-21-21	4,300	br. sh. drilling
McPhail, Hugh, Well No. 1, Kettleman Hills	13-24-18	2,095	plugging
Milham Explin., No. 1 Kettleman, Kings Co.	2-22-17	6,150	suspended
Shell, No. 2 Berlywood, Moorpark	32- 3-20	6,984	reaming
Continental Oil Co., No. 1 Burnham, Ventura Co.	22- 5-18	3,491	hd. sd. drilling
Star Petroleum, No. 2 Canet, Ventura Co.	13- 3-23	4,251	hd. sd. drilling
Standard, No. 1 Camarillo, Ventura Co.	29- 2-20	5,718	hd. sd. drilling
Standard, No. 1 Saticoy, Ventura Co.	9- 3-22	1,425	hd. sd. drilling
Petroleum Sec., No. 1 Diablo, Ventura Co.	26- 5-18	3,750	hd. sd. drilling
Parkford, E. A., No. 1 Strathern, Ventura Co.	5- 2-18	4,002	to test
Shell, No. 1 Strathern, Ventura Co.	6- 2-18	1,280	hd. sd. drilling
Miley Oil Co., No. 1 Red Mountain, Ventura Co.	7- 3-23	980	suspended
Richfield, No. 27 Piru, Ventura Co.	35- 5-18	1,902	suspended
Superior Oil Co., No. 1 Fillmore, Ventura Co.	33- 4-20	998	sd. drilling
Milham Explin., No. 2 Buttonwillow, Kern Co.	8-28-23	4,662	gas well
Milham Explin., No. 2 Kern, Kern Co.	8-28-23	285	sd. drilling
Milham Explin., No. 3 Buttonwillow, Kern Co.	7-29-24	4,150	suspended
Morris, F. L., No. 1 Semitropic, Kern Co.	16-27-23	....	location
Pacific Eastern, No. 1 Fruitvale, Kern Co.	21-29-27	3,710	gr. sd. drilling
Pacific Eastern, No. 1 Bakersfield, Kern Co.	6-30-28	4,950	deepening
General Pet., No. 1 Edison, Kern Co.	5-30-29	4,006	looks good
Getty, George F., No. 1 Edison, Kern Co.	22-29-29	3,717	plugging back
Midway Northern, No. 1 Edison, Kern Co.	29-29-30	Rig	rigging up
General Pet., No. 1 Granite Canyon, Kern Co.	21-27-28	1,738	500 bbls.
Union, No. 1 Granite Canyon, Kern Co.	28-27-28	1,781	to test
Shell, No. 1 Mon Bluff, Kern Co.	3-28-28	3,578	hd. sd. drilling
North American, No. 1 Wallace, Delano	5-25-26	3,703	fishing
Fresno Madera Oil Co., No. 1 Clovis, Fresno	18-12-21	3,891	hd. sd. drilling
Barneyberg Oil Co., No. 1 Brown, San Luis Obispo	25-32-14	2,291	hd. sd. drilling
Richfield, No. 1 Wreden, San Luis Obispo Co.	10-29-17	2,600	hd. sd. drilling
Miley Ex. Co., No. 1 Carissa, San Luis Obispo Co.	15-29-17	2,230	hd. sd. drilling
Union Oil Co., No. 1 Huasna, San Luis Obispo	34-32-15	Rig	rigging up
Shell, No. 1 Cowell, San Mateo Co.	8- 6- 5	5,210	hd. sd. drilling
Shell, No. 1 Rossi, Petaluma	8- 5- 6	Mtl.	building rig
Thomas & Hammill, Well No. 1 Alameda Co.	16- 3- 3	1,470	suspended
Buttrum, F. V., No. 1 Odin, Santa Barbara Co.	20-25-27	1,818	sd. sh. drilling
Elliott & Clarke, No. 1 Marcos, Santa Barbara Co.	3- 6-29	3,637	to abandon
Gorham, G. O., No. 1 Orcutt, Santa Barbara Co.	33-10-34	Mtl.	building rig
Becker, Geo. F., No. 1 Summerland, Santa Barbara	33- 4-25	3,060	water trouble
Petroleum Exp. Co., No. 1 Modoc, Santa Barbara	20- 4-27	1,460	sd. sh. drilling
Birch Oil Co., No. 1 Porterville, Tulare Co.	13-20-26	2,880	hd. sd. drilling
Fort Wayne Synd., No. 1 Goodcell, Madera Co.	22-10-17	2,250	fishing
Continental Oil Co., No. 2 Smith, Colusa Co.	31-18- 4	3,950	gas show

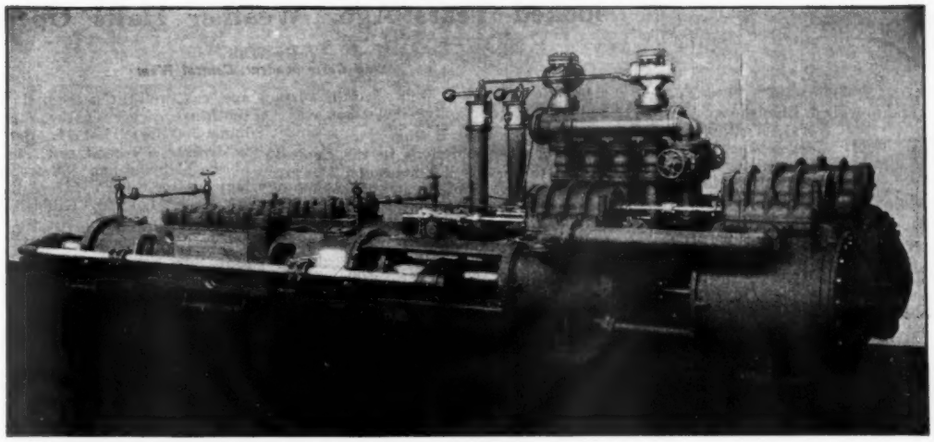
TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total This week	Daily Average	Total Last week	Daily Average	This year To date	Same time Last year
Crude oil	162,914	23,273	78,172	11,168	9,679,212	10,785,889
Fuel oil	.....	.....	.....	.....	6,788,773	7,019,399
Diesel and gas oil	.....	.....	.....	.....	2,375,151	3,301,731
Gasoline	322,982	46,140	402,052	57,150	9,099,422	6,680,306
Tops	.....	.....	.....	.....	.....	374,504
Coastwise—						
Crude oil	482,762	68,966	425,776	60,825	23,080,340	22,474,478
Fuel oil	186,692	26,670	438,890	62,697	12,663,160	11,437,599
Diesel and gas oil	50,452	7,207	.....	.....	415,865	165,935
Gasoline	136,171	19,454	116,293	16,615	9,471,028	7,560,546
Kerosene	.....	.....	4,653	665	240,072	197,008
Tops	.....	.....	.....	.....	259,375	501,520
Exports—						
Crude oil	127,407	18,201	36,092	5,156	2,301,739	3,833,016
Fuel oil	660,410	94,344	693,525	99,075	27,323,670	17,889,034
Diesel and gas oil	70,576	10,082	27,767	3,967	1,405,477	565,379
Gasoline	230,095	32,871	224,623	32,089	5,278,865	4,469,677
Tops	.....	.....	.....	.....	302,303	194,642
Kerosene	68,029	9,718	112,910	16,130	2,159,771	2,795,420

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Crude oil	.....	.....	.....	.....	.....	.....
Fuel oil	.....	.....	.....	.....	.....	78,653
Diesel and gas oil	.....	.....	74,975	10,711	975,036	1,915,670
Gasoline	.....	.....	.....	.....	2,042,773	1,028,368
Tops	.....	.....	.....	.....	.....	73,698
Kerosene	.....	.....	.....	.....	.....	.....
Lubricants	.....	.....	.....	.....	439,357	407,860
Coastwise—						
Fuel oil	.....	.....	98,032	14,005	4,790,421	5,199,690
Diesel and gas oil	.....	.....	15,150	2,164	238,733	.....
Gasoline	60,407	8,630	54,144	7,735	4,803,225	4,489,214
Kerosene	.....	.....	3,129	447	216,238	304,676
Exports—						
Fuel oil	103,928	14,847	45,729	6,533	2,629,860	2,929,037
Diesel and gas oil	.....	.....	107,818	15,403	107,818	.....
Gasoline	64,165	9,166	.....	.....	2,742,608	1,994,594
Kerosene	.....	.....	50,140	7,163	947,295	1,936,476
Lubricants	.....	.....	34,713	4,959	61,408	66,706

WORTHINGTON



Worthington 20-in. and 30-in. by 6-in. by 24-in. Horizontal Compound "Duoplex" (Synchronized Twin Single) Packed-plunger Hot Oil Pump. Capacity, 200 gal. per min. of 1000 degrees F. oil against 1500 lb. per sq. in. discharge pressure.

Worthington 4¾-in. by 18-in. Horizontal Duplex Power-driven Packed-plunger Hot Oil Pump. Capacity 200 gal. per min. of 1000 degrees F. oil against 1200 lb. per sq. in. discharge pressure.

WORTHINGTON PRODUCTS

PUMPS
Steam and Power
Reciprocating and Centrifugal

COMPRESSORS
Air, Gas and Ammonia—Air Lifts

CONDENSERS
Surface, Jet, Barometric—and vacuum auxiliaries
Steam-Air Ejectors

ENGINES
Oil and Gas

FEEDWATER HEATERS
Locomotive and Stationary

METERS
Water and Oil

Literature on request

WORTHINGTON
hot oil pumps

WORTHINGTON Hot Oil Pumps provide even discharge pressure... no heavy pulsations... and full rated capacity under the most severe service conditions. The Worthington "Duoplex" (Trade Mark) hot oil pump, two single units synchronized . . . is arranged so that either cylinder may take the entire load. No choked lines with this pump.

39-6135-6

Piston and Plunger Patterns Steam and Power Driven Single Duplex "Duoplex" (Synchronized Twin Single—Steam Driven)

WORTHINGTON PUMP AND MACHINERY CORPORATION
115 BROADWAY, NEW YORK CITY BRANCH OFFICES IN 24 CITIES

Worthington Pumps are in stock at:

TULSA, OKLAHOMA—WORTHINGTON MACHINERY CORPORATION OF OKLAHOMA
LOS ANGELES, CALIFORNIA—WORTHINGTON COMPANY, INCORPORATED
SAN FRANCISCO, CALIFORNIA—WORTHINGTON COMPANY, INCORPORATED
NEW ORLEANS, LA. HOUSTON, TEXAS — AMARILLO, TEXAS BORGER, TEXAS — SAN ANGELO TEXAS — A. M. LOCKETT AND COMPANY

Well Extends Auglaize County Area

Fair Well Southwest of Findlay in Territory Overlooked Years Ago. Weather Halts Operations

By Whit
Staff Correspondent, Central West

FINDLAY, Ohio, Dec. 26.—Another bad week prevailed throughout the Central West Field for development work. Continuous rains prevailed for close to 24 hours, followed by a cold wave. Central Ohio and parts of the Lima Field were submerged. Between Columbus and Toledo, many of the highways were under water and much damage was done. In the Central West Field proper but few completions were reported. Indiana failed to report even one well and Illinois only had one new well. The Lima Field announced 5 wells and Central Ohio 16 completions and Michigan had 9 scattered over the State.

According to operators, the next couple of months will see little work in the Central West, unless warmer weather prevails; even the Central Ohio Field will not make as good showing as at this season a year ago. The bulk of the present work in the field is being done by the gas companies.

Lima Field

The Brookside Oil Co.'s test in the southwest corner of the Edward J. Rodeheffer farm, in the SW of Section 29, Washington Township, Auglaize County, struck top of the Trenton at 1,202 feet and at 30 feet in the sand produced an initial of 15 bbls. This well is a short distance south and a little east of the hamlet of New Knoxville, about 6 miles south and 4 miles east of St. Marys, and some distance south of the old lines of the Trenton Rock development. It adds what looks like some interesting territory for the coming season's development.

Northeast of Lima and southwest of Findlay, in Bath Township, Allen County, H. F. Kelly and others' second test, 750 feet from the north line and 250 feet from the east line of the John M. Miller farm, in the SE of Section 11, pumped an initial of 25 bbls. Sand was topped at 1,317 feet and drilled 50 feet in. While this well is in the vicinity of production found many years ago a considerable area was overlooked at that time and now comes in nicely for the coming season as much work is being planned and will be done if prices show an upward tendency when early spring comes. Wells of the caliber of this one are few and far between these days.

The Lindy Oil Co.'s second test, 700 feet from the north line and 600 feet from the east line of the John E. Boyer farm, in the NE of Section 11, Washington Township, Sandusky County, pumped an initial of 8 bbls. Top of sand was at 1,291 feet and total depth of hole, 1,341 feet.

In Hopewell Township, Mercer County, A. J. Metzger's No. 4 well, 1,200 feet from the north line and 1,000 feet from the east line of the Samuel E. Fetters farm, in the NE of Section 20, pumped 5 bbls. initial from a total depth of 1,157 feet. The top of the sand was struck at 1,102 feet.

In the Elmore Field, in Harris Township, Ottawa County, Gust Magsig and Sons' No. 15 well, 1,000 feet from the south and west lines of the Charles H. Magsig farm, known on the oil map as the old J. E. Meyerholtz farm, in the SE of Section 23, struck top of Trenton at 1,248 feet and went 46 feet in the sand, the well doing an intial production under pump of 25 bbls., the best completion made in this field for a long time. There is still much undrilled acreage in the vicinity of Elmore as well as to the north and east of that active little hamlet.

Central Ohio

Out of 16 completions in the Central Ohio Field, 5 were dry holes and 11 were gas producers. The streams through this part of the State are at flood stage so that little moving of material for new wells can be done. Some of the macadamized highways were impassable during the first half of the week. The Scioto River that runs through Columbus was almost at flood stage and many of the big streams in that part of the State were in the same shape. Getting out of Newark by auto for a field trip was impossible.

In Jefferson Township, Knox County, the East Ohio Gas Co.'s No. 1 on the Michael Strang farm, Section 20, came in a dry hole. This company is drilling No. 3 well, 700 feet from the south line and 600 feet from the west line of the Bert Nyhart 53 acres, Section 7.

Ashland County

In Clear Creek Township, Ashland County, the Logan Gas Co. found a light gas well at a second test 415 feet from the south line and 230 feet from the west line of the James W. Shaw 42 acres, Section 12, and is drilling a test 660 feet from the south and east lines of the Hulda Shaw 80 acres, same section. Hulse and Kundtz are drilling a test in the northeast corner of the M. Bandeen 13 acres, same section. Ringler and others got a light gas well at a test in the southwest corner of the W. H. Heiffner 4 acres, Section 11.

The Logan Gas Co. is drilling a test 900 feet from the south line and 1,150 feet from the east line of the W. R. Lindsay 88 acres, Lot 5, Ruggles Township, same county.

In Sullivan Township, same county, the Ohio Fuel Gas Co. made a location for a test 1,100 feet from the north and west lines of the W. E. Richards farm, Lot 48. In Hanover Township, the Logan Gas Co. is drilling a test 1,000 feet from the south line and 700 feet from the east line of the S. A. Cline 72 acres, Section 19.

Medina County

In Lafayette Township, Medina County, the Ohio Fuel Gas Co. drilled in a light gas well at No. 2, located 375 feet from the south line and 1,500 from the east line of the Leon J. Reynolds 99 acres, Section 35. Same company is drilling a test 700 feet from the south line and 800 feet from the east line of the John H. Grimm farm, Section 8.

In Chatham Township, same county, E. R. Edson & Son Co.'s No. 38 on the W. P. Wertz farm, Lot 54, Section 14, was a dry hole. Same company found a duster at No. 26 on the W. H. Wideman farm, same field.

Wayne County

A dry hole was drilled in a test by the Wiser Oil Co., in the southeast corner of the Alice McFadden 40 acres, Section 8, Chester Township, Wayne County. The Logan Gas Co. is drilling a test in the northeast corner of the J. W. Troxel 82 acres, Section 7, and M. C. and G. K. Rogers are working at a test in the southwest corner of the H. Hartzel 173 acres, Section 9.

In Crongress Township, Palmer & Geisinger's gest in the northeast corner of the Charles F. Schutt 8 acres, Section 36, is good for about 250,000 feet of gas

Holmes County

In Knox Township, Holmes County, I. W. O'Hail's test on the W. W. Scott 59 acres, Lot 16, developed nice gas volume.

In Monroe Township, same county, the East Ohio Gas Co. brought in an average gas well at a second test in the southeast corner of the Steve R. Williams 100 acres, Lot 11. Same company is drilling a second test 275 feet north of the highway and 400 feet east of the highway on the F. H. and L. E. Garver 20 acres, Lot 18, Killbuck Township, same county.

Cuyahoga County

In the Cleveland Field of Olmstead Township, Cuyahoga County, McGrath and others drilled in an exceptionally fine gas well in a second test on the W. J. and C. Nesson 5 acres, Lot 32, and 200 feet from the north line of the lease and 200 feet east of the highway. The gas was found in the Newburg sand. John Arthur has a 1,000,000 foot gas well at No. 1 in the southeast corner of the L. S. Tuller 21 acres, Lot 28.

The largest gas well found in the Cleveland Field for many a day was drilled in by Hulse & Kundtz in their test in the northeast corner of the L. M. Ames 29 acres, Lot 28, Olmstead Township, estimated close to 10,000,000 feet. J. B. Harrison and others are drilling a test in the southwest corner of the Schuman three-quarter acre, Lot 30. Groff Brothers are drilling No. 2 well, 500 feet from the south line and 175 feet from the west line of the A. and A. Dryer 10 acres, Lot 29. John Arthur is drilling No. 1 well on the A. E. Guage 1-acre tract, Lot 7, and made a location for No. 3 on the J. B. Harrison 30 acres, Lot 7. This location is 1,200 feet from the north line and 275 feet from the east line of the farm.

Coshocton County

The Ohio Oil Co. drilled a nice gas well in No. 3 on the Robert McKelvey farm, Section 2, Monroe Township, Coshocton County.

In Newcastle Township, Cassingham and Bell Brothers' No. 22 well, 175 feet from the south line and 1,500 feet from the east line of the George Cassingham 73 acres, Lot 2, is a light gas well from a sand from 900 to 910 feet.

The Logan Gas Co. is getting ready to start a test 300 feet from the south line and 960 feet from the west line of the J. F. Wilson 126 acres, Section 14, Perry Township.

Scattered Tests

In Lawrence Township, Starke County, Stoltz and Johnson's test, 335 feet from the north line of the Amos Hess 43 acres, Section 3, and 400 feet west of the highway, came in a duster.

East Ohio Gas Co. is drilling a second test 1,600 feet from the north line of the Robert Miller 162 acres, Lot 28, Franklin Township, Summitt County, and 400 feet west of the highway.

Illinois

Only one completion was reported from the Illinois Field since the last review. This well is a wildcat drilled by M. E. Harris and others, 1,300 feet from the south line and 200 feet from the west line of the Samuel Randolph farm, in the NE of Section 12, Licking Township, Crawford County, and is a dry hole at a depth of 931 feet. This test is to the eastern edge of the old line development back in the early days of 1907, in the pool that extended directly south from Johnson Township, Clark County.

Michigan

Much interest was manifested in the second test made by the Muskegon Oil Co., near the town of Muskegon, in Muskegon County, Michigan, drilled to a depth of 1,610 feet, where both oil and gas was encountered. The well, estimated at from 15 to 20 bbls. a day, shows a volume of 500,000 feet of gas. This is the most important strike made in the western portion of the State for a number of years and may bring about a nice drilling campaign the coming spring. Little can be done during the severe winter months, being near the east shore of Lake Michigan.

Another interesting show was made in a test drilled by the Anchor Bay Oil Co., near Anchor Bay in Macomb County, between Detroit and Port Huron and along Lake St. Clair. This well was put on the pump and estimated at close to 3 bbls. a day. While not large, it shows that oil exists there and further test work might open up a new producing area for the Wolverine State.

Saginaw Field

Development work is lagging in the Saginaw Field at this time due to the blustry and cold weather. This has been an active season in the field and there are still many more locations to drill within defined limits.

On the Eddy estate property in Saginaw, the Saginaw Prospecting Co.'s last completion is reported good for 30 bbls. from the Berea sand. The well is not far removed from the center of the city and near the Saginaw River.

Wickes Brothers' No. 4 on the Wickes property, on the east side of the Saginaw River and along Water Street, is said to be good for 5 bbls.

At the extreme northwestern part of the Saginaw Field, the Sun Oil Co.'s No. 4 on the Kuck farm was drilled through the Berea sand and also through the Saginaw sand, and, failing to show commercial production, has been abandoned.

In Swan Creek Township, Saginaw County, north of Chesaning, E. M. Miller's test on the O. K. Bailey farm, had only a light showing of oil. It was drilled through the Berea, then through the Saginaw sand at 2,473 feet and shot with 100 quarts and has been abandoned. Jack Hendricks and others are shut down drilling at a test on the George Harris farm, near Chesaning on account of cold weather.

Wildcat Wells

In Shiawassee County, the Sun Oil Co. has abandoned its test on the Gallagher-Scully property, having gone through the lower Traverse sand without getting much of a showing after passing through the shallower Berea sand. J. A. Walsh is still drilling at his test near Fairfield, same county.

In Conway Township, Livingstone County, J. T. Norris' test on the C. A. Smith farm, Section 16, 7 miles southeast of the town of Morris, was drilled through the Berea sand and dry.

In Crawford County, near Grayling, the Grayling Oil Co.'s test is reported down to 1,875 feet and still drilling.

In Charlevoix County, near the town of Charlevoix, unknown parties drilling at Trenton have shut down on account of cold weather.

In Greendale Township, Midland County, the Pure Oil Co. is shut down at a depth of 3,150 feet on the J. B. Raynor farm, awaiting the arrival of pipe. This well passed through the Berea sand with only a scum of oil at a depth of 2,390 feet.

In Roscommon County, east of the town of Roscommon, the Grayling Oil Co.'s test is reported drilling at 3,200 feet.

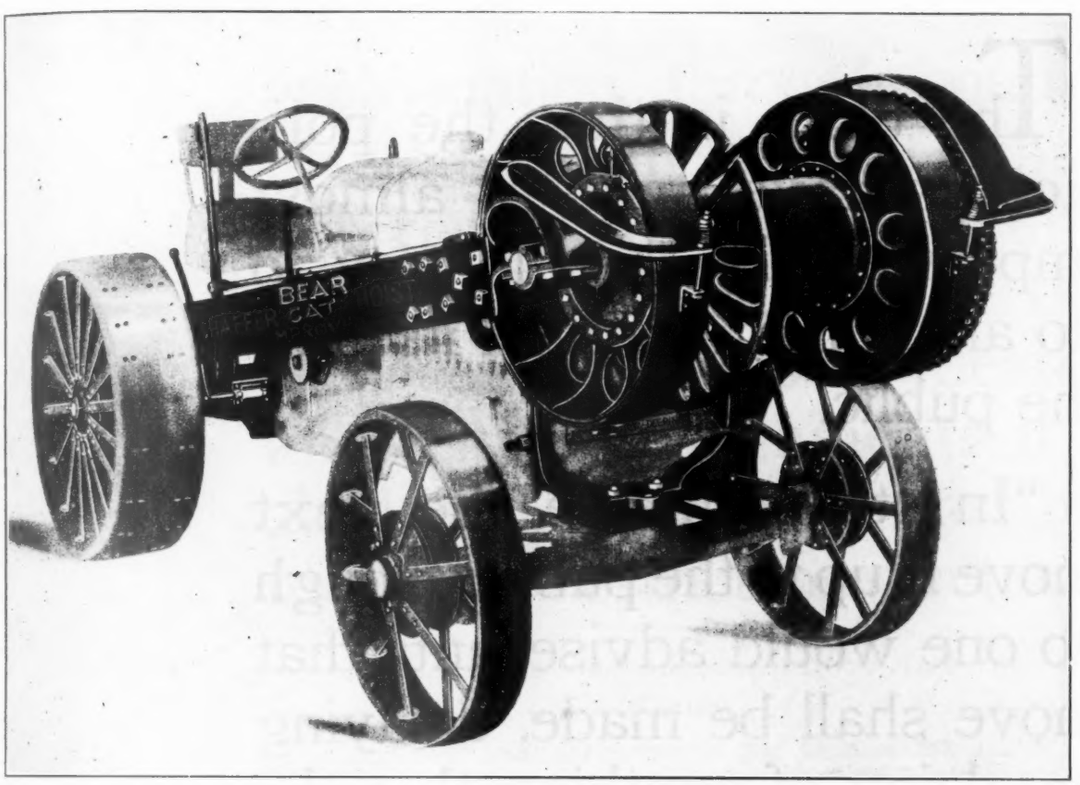
In Aranac County, near Sterling, the test of Vorhess & Sovereign is reported dry in both the Berea and Saginaw sands and has been abandoned.

Frank Obee is shut down at his test in Section 17, Meridian Township, Sanilac County. William Bradley and Son are shut down at a test on the Fred M. Potter farm, near Alpena, in Alpena County.

SHAFFER BEARCAT HOIST

WITH 10-20 McCORMICK-DEERING TRACTOR

SPEED WITH SAFETY—POWER WITH ECONOMY



SPECIFICATIONS:

DRIVE—Thru Tractor Transmission, three speeds forward, one reverse.

CONTROL—Clutch and Brake Levers, operated from Driver's seat.

BRAKES—Double drum, 5″x30″. 840 sq. in. braking surface, lined with the old reliable RUSCO Lining.

DRUM—13″x26″ Free Rolling on Hyatt Roller Bearing.

LINE CAPACITY—
½″—5000′; 9/16″—4090′; ⅝″—3200′.

PULLING CAPACITY—Single Line:
Low Speed—11,000 lbs. at 59′ per Minute.
Second Speed—5700 lbs. at 116′ per Minute.
High Speed—2240 lbs. at 295′ per Minute.

ROAD SPEEDS—2-4 and 10 miles per hour.

TOOL BOX—26″x48″x6″.

DIMENSIONS OVER-ALL—15′x7′

TOTAL WEIGHT TRACTOR AND HOIST—7860 lbs.

NOTE—This Unit Can Be Furnished With ALWAY TRACK at Additional Cost

SHAFFER'S ALMETAL SAND REEL SUPPORT

FOR ALL MAKES AND TYPES OF FRICTION DRIVEN SAND REELS

INSTALLATION

The support can easily be installed by any rig builder or lease employee. The metal tail and knuckle posts occupy the same position as the wood structure formerly used and does not require any change in standard equipment.

Its ready assembly and disassembly facilitates transportation from one well to another.

Each end of the sand reel shaft is supported by adjustable, chain oiled, babbited bearings, insuring easy running and positive engagement of the friction wheel with band wheel and back brake.

All connections are a snug fit, thus eliminating all lost motion.

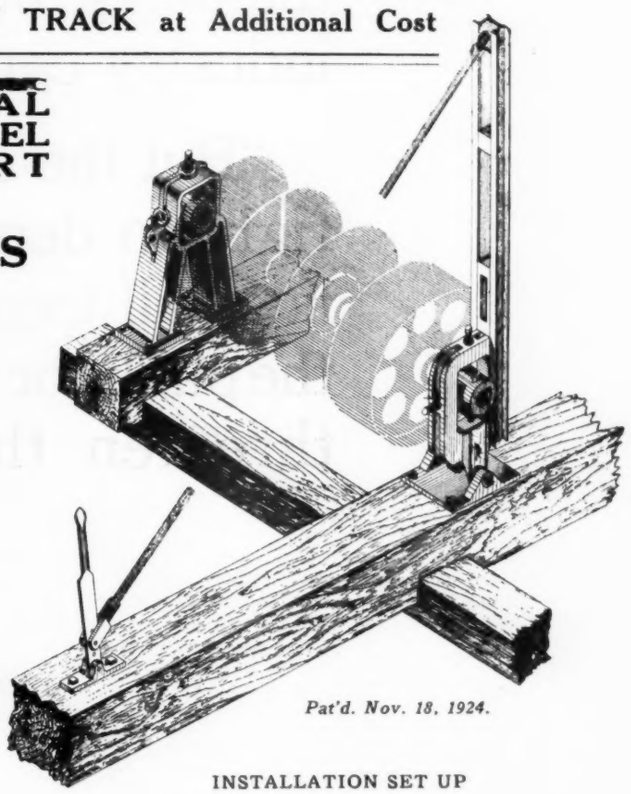
No attention necessary except oiling and occasionally tightening set-screws.

For Additional Information—Write Direct to the Manufacturer

THE SHAFFER SPECIALTY COMPANY

PATENTED OIL WELL EQUIPMENT

TULSA, OKLAHOMA, U. S. A.



Pat'd. Nov. 18, 1924.

INSTALLATION SET UP

"The truth is that the politicians have made it almost impossible for the industry to do anything to protect itself or the public.

"In strict justice the next move is up to the public, though no one would advise, until that move shall be made, delaying the doing of anything that the industry can do.

"But the oil industry has the right to demand that the public shall treat it fairly. Let not the public or its representatives, threaten this industry with

asphyxiation, through control by state commissions, if it shall not restrict production, and continue to hold over it the menaces of corporate deaths and felons' punishments if it shall adopt the only possible means to restrict production."

Extract from a paper addressed by Mr. F. C. Proctor to Mr. E. W. Clark, President, American Petroleum Institute, and appearing in the October 20, 1927 issue of The Oil and Gas Journal

Universal Oil Products Company
Owner of the Dubbs Process
310 South Michigan Ave
Chicago, Illinois

Further Tests in Kentucky Counties

Henderson, Webster, Union, Hopkins and Muhlenburg Structures Lead to Leasing Activities. Geologist Busy

By Whit
Staff Correspondent, Kentucky-Tennessee

BOWLING GREEN, Ky., Dec. 24.—Another quiet week has passed in the Kentucky Field owing to the continuous heavy rains that brought high water and plenty of mud, especially in the western division where so much activity has been displayed, centering in Ohio, Daviess and Hancock Counties. Owensboro is crowded with oil operators, leasers, and scouts for the large operating concerns, and many deals are being made for leases and royalty interests far away from production. Leasing activity is not confined to the three counties mentioned, as many of the scouts believe that other adjoining counties are bound to fall in line when given tests where structures are known to exist.

The fact is not overlooked that possibilities are very good in Henderson, Webster, Union, Hopkins, and Muhlenburg Counties, and leasers are quietly working on known structures rounding up blocks of territory. Oil has been produced in Webster County, near Sebree, from shallow depths, not in large quantities, but enough to show that oil exists there. In Union County 13 miles from the town of Henderson, F. E. Black found a pay sand with a light showing at a depth of 647 feet on the Robert O'Daniel farm, but going deeper in quest of other sands. The showing in this well has brought about a leasing campaign in Union County, directly west of Henderson County, and arrangements are being made to drill a test for both oil and gas in the Rock House section. Seven of the large companies have had geologists in this county for some weeks, and the supposition is that both Union and Henderson Counties will soon be given further tests.

Week's Work

A summary of the week's work in the Kentucky Field shows 15 completions, 6 producers with an initial production of 243 bbls., 7 dry holes, and 2 gas wells. Compared with the previous week, there were 8 less completions, 10 less producers, 482 bbls. less production, 1 more dry hole, and 1 more gas well. The wells were distributed by counties and districts as follows:

County—	Comp.	Oil wells	Prod.	Dry	Gas
Estill	6	1	1	5	0
Floyd-Knott	2	0	0	1	2
Ohio	2	1	25	1	0
Johnson-Magoffin	2	2	15	0	0
Daviess	1	1	200	0	0
Wayne	1	1	2	0	0
Total	15	6	243	7	2
Last week	23	16	725	6	1
Difference	8	10	482	1	1

Out of the 23 wells reported last week, 10 were in Tennessee, of which 2 were dry, and there was an initial production of 173 bbls.

Eastern Kentucky

A few completions are reported from the eastern division of Kentucky, very light producers. The best well was Oliver Jenkins and others' No. 3 on the H. S. Adams, Sr., farm, District 31, Johnson-Magoffin Counties, with an initial of 10 bbls.; and Hupp, Duff and others' No. 2 on the Harriett Hammond farm, same district, pumped an initial of 5 bbls. Loleer and others are drilling No. 1 on the Janex Penix farm, District 27, same area. In the same district, Henry Lemaster is drilling No. 3 on his own land.

In District 21, Floyd-Knott Counties, the Distill Martin Oil & Gas Co.'s second test on the Oak Osborn farm, is reported dry. The Ivyton Oil & Gas Co. brought in two good wells in the same district in No. 1 Tom Turner farm and No. 1 on the Woots Gearhart farm.

In District 8, Estill County, the Superior Oil Corp.'s Nos. 29 and 32 on the J. D. Alexander tract were dry holes, while its No. 12 on the Joe Mitchell farm is a 1-bbl. pumper. The Reno Oil Co.'s Nos. 10, 11, and 12 on the George Mitchell farm were all dusters at shallow depths.

In District 13, Wayne County, William O. Southern, Jr., No. 9 on the Nancy Jones and others farm, is a 2-bbl. pumper.

Western Division

The banner well of the period in the western division of Kentucky is C. L. Young and others' wildcat on the W. G. Hayden farm, in the southern part of Daviess County, credited as good for 200 bbls. initial. This well, being far in advance of production, brought about a real leasing activity and many deals were put through on acreage and royalty interests.

In Ohio County but two completions were reported owing to weather conditions, but there is no let up in development work where work can be done. Along with Daviess County, it is the active part of the Blue Grass State at this time and good weather will bring out great activity as all the large companies are getting set for an early spring drilling.

The wildcat of the Globe Oil Co. and others on the Vincent J. Steele chicken farm, near Buford, several miles west of the Ambrose Pool, and in the western part of Ohio County, is rated at 25 bbls. at 1,100 feet in depth. This test is about midway between the Ambrose Pool in Ohio County and the Dimmick Brothers' well on the John Ratcliff farm, near Livia, in the northeastern part of McLean County, which showed 110 bbls. initial.

In the Sunnydale Field of Ohio County, and southeast of the Ambrose Pool, G. Bednar and others drilled a dry hole in a test on the Widow Whobrey 200 acres at a depth of 498 feet. Wood Oil Co.'s No. 3 on the J. C. Ralph 21 acres, same

(Continued on Page 212)

Little River Wells Run Together

Drills Meet at Shallow Depth. Tool From One Well Is Fished Out of Another. Both Holes Abandoned

By J. L. Dwyer

When two drilling wells in the Seminole Field ran into each other recently, it should have cleared away many misunderstandings regarding unusual geological conditions in that region, and as the poet said when the mail man handed him the rejected manuscript, "it all comes back to me now."

There have been innumerable instances of two drilling wells running together, but the performance in Little River is believed to be outstanding on account of the distance between wells, (660 feet) and the shallow depth at which they ran amuck. The wells ran together at a depth of 2,100 feet, and considering the distance between them, it means that for every 3 feet of hole that they made perpendicularly, approximately 1 foot of hole was drilled horizontally. It is believed to be one of the most shallow instances of two wells running together, although there are many cases where wells have run together at depths of 4,000 and 5,000 feet.

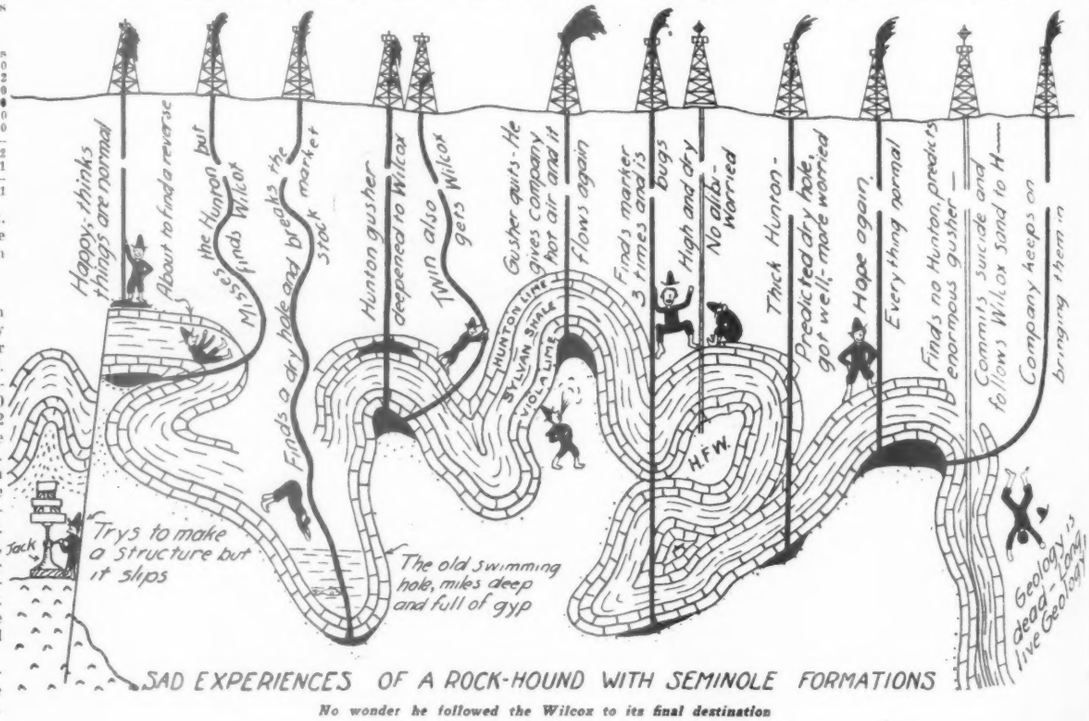
Since the Seminole Field was discovered, there have been numerous controversies regarding what effect the crooked holes may have had on the subsurface conditions. The discovery of conditions which themselves were contradictory originated this argument, and when one well would have a total depth of 4,280 feet with no water showing, and would be a good producing well, while the offset across the fence with a total depth of only 4,260 feet, and an elevation similar to the first well, would find only salt water in the Wilcox, it was generally accepted that Denmark held something which was not all correct.

If the measurements of the holes at Seminole are to be considered as correct and the holes are to be considered perfectly vertical, then a cross section of the area would reveal a series of shattered structures none of which had any appreciable area, and for calculting the region which most of them covered, yard stick geology could be used by considering three locations good and the next two locations poor.

Effect of Offsets

However, since it has been claimed with good authority that there never was a perfectly straight hole drilled, and since there is ample reason to believe that the hasty drilling campaign at Seminole had for its aim speed rather than straight holes, it is quite possible there are dozens of locations where the bottom of the holes have penetrated the Wilcox sand within a few feet of each other. In this manner, it is not hard to visualize the effect which has been experienced where

(Continued on Page 202)


Happy; thinks things are normal
About to find reverse
Misses the Hunton but finds Wilcox
Finds a dry hole and breaks the stock
Hunton gusher deepened to Wilcox
Twin also gets Wilcox
Gusher guts-he gives company hot air and it flows again
HUNTON LIME
SYLVAN SHALE
VIOLA LIME
Finds marker 3 times and is dugs
High and dry
No alibi-worried
H.F.W.
Thick Hunton-
Predicted dry hole, got well-more worried
Hope again.
Every thing normal
Finds no Hunton, breaks enormous gusher—
Commits suicide and follows Wilcox sand to H—
Company keeps on bringing them in
Jack
Trys to make a structure but it slips
The old swimming hole, miles deep and full of gyp
Geology is dead-long live Geology
SAD EXPERIENCES OF A ROCK-HOUND WITH SEMINOLE FORMATIONS

No wonder he followed the Wilcox to its final destination

The one Sure Means to Control Lift Efficiency

Foxboro Automatic Volume Controller.

That gas lift stimulates production is only half the story. Lift efficiency depends upon proper volume and pressure control.

The Foxboro Automatic Volume Controller has proved invaluable for this service. It:

Properly proportions the volume of gas or air to the wells;

Permits the manifolding of gas compressors into a single large header;

Enables wells to operate continuously at a predetermined rate;

Saves the services of men who otherwise would put all their time on this job;

Gives an infallible daily record of control of gas going to the wells.

We suggest an immediate application for a trial installation, as the call for Foxboro Volume Controllers increases daily.

THE FOXBORO CO., *Inc.*

Neponset Avenue, Foxboro, Mass. U. S. A.

205 So. Cheyenne Ave., Tulsa, Okla.

NEW YORK	CHICAGO	BOSTON	PHILADELPHIA
PITTSBURGH	CLEVELAND	ROCHESTER	ATLANTA
LOS ANGELES	DETROIT	SAN FRANCISCO	PORTLAND, ORE.

FOXBORO

REG. U. S. PAT. OFF.

THE COMPASS OF INDUSTRY

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In case an immediate answer is important, one will be given by mail if the writer requests it.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

SATURATION METHOD FORMULA

How do you determine the volume of gas contained in a sand by the so-called saturation method? Is this the most accurate method to use?—B. F. U.

The formula for determining the amount of gas originally contained in a gas sand by the saturation method follows: Volume of gas equals the area of the gas sand (in square feet) times the thickness of the gas sand, times the porosity (usually taken as 20 per cent unless actually determined) of the sand, times the quantity obtained by dividing the sum of the rock pressure plus the atmospheric pressure by the atmospheric pressure. To illustrate, assume a sand covering 200 acres having a thickness of 10 feet and a porosity of 20 per cent. Assume that the atmospheric pressure in that locality is 14.4 pounds per square inch. Assume a rock pressure of 200 pounds.

Then gas volume =

$$200 \times 43560 \times 10 \times 0.15 \times \frac{(200 \text{ plus } 14.4)}{14.4}$$

In fields that are just beginning to produce and where there is not sufficient production data available for use in other methods, the saturation method is the most accurate in use at the present time. Methods of estimating gas reserves are described in detail in The Oil and Gas Journal of June 30, 1927, in an article by R. R. Brandenthaler on "Problems in Estimating Gas Reserves."

PENETRATION OF MUD INTO SAND

I have been wondering how far mud will penetrate into a sand when drilling. Can you give me any information on the subject?—J. P. J.

It depends entirely on the type of the sand. Tests made on a core of very hard and compact sand demonstrated that no mud entered the sand at 2,000 pounds pressure. In rather loose, unconsolidated and partly depleted oil sands mud has been known to migrate from one well to another. When drilling through oil sands that have not been produced it is doubtful whether any mud will penetrate into the sand. Conclusions reached from actual field tests are often misleading, as the loss in total mud fluid volume is often caused by loss of water from the mud fluid, no decrease in the mud actually having occurred.

REMOVING PLUGS SAFELY

In testing certain wells under considerable pressure it is necessary to remove plugs in casingheads, since there are no blow-off valves on the wells. We wish to know if there is an instrument designed which will allow these plugs to be removed with safety to the operator. If you are unable to supply us with the information, could you tell us where such information can be found?—W. E. R.

As far as known, no instrument has been designed to meet the requirements outlined in your letter. Further information as regards the type of casing head in use, also the pressure held on the casinghead would be of assistance in helping to solve your problem. Casinghead pressures as high as 1,000 pounds are not uncommon. It is presumed that the casinghead pressures in your locality do not exceed 400 pounds. It also is presumed that you intend inserting the plug again or preferably a nipple after the plug has been removed.

A possible method for overcoming your difficulty is suggested. Clamp a short nipple of sufficient internal diameter to go over the plug onto the casinghead, using a heavy rubber gasket between the casinghead and the nipple to make a tight seal. Install a gate valve on the nipple. Screw a short nipple into the gate valve. Insert a socket wrench having a long, round shank through a stuffing box installed on the outer nipple and engage the plug with it. Then gradually unscrew the plug. As soon as the plug is loose, it will be forced against the stuffing box, and the gate in the valve may be closed. It might be necessary to put a clamp on the wrench shank and gradually loosen it as the plug is unscrewed to prevent possible accident when the plug is released. Also the nut on the stuffing box must be sufficiently loose to permit turning of the wrench.

SIGNIFICANCE OF TEMPERATURE CHANGES

In what way do changes in the temperature of oil coming from a well indicate the approach of water in a well?—R. W. B.

Gradual or even slight abrupt changes in the temperature of the oil may be caused by changes in the method of production. For example, holding pressure on a well has been known to result in an increase in temperature of several degrees. This is thought to be due to the decrease in pressure drop between the sand and the well. The approach of salt water is often indicated by a temperature, the abruptness of the change denoting the rapidity with which the water is approaching. The temperature of the water is the deciding factor as to the degree of temperature change. In some fields, the temperature of the salt water was found to be very warm. In one of the California fields, the water was sufficiently warm to be uncomfortable to the hand when placed in it. It is advisable to obtain the temperature of water as soon as possible for future reference.

STABILIZING CRUDE OIL

What is meant by stabilizing crude oil? I know about the stabilization process in the case of gasoline, but I never heard of stabilizing crude and I was wondering if what I read might not be a mistake.—T. J. P.

This form of stabilization—"topping" crude it more often is called—now becoming fairly common in this country, has been employed for many years in foreign fields where there is danger of serious loss from evaporation in transporting high-gravity oil long distances by tank car or pipe line. The process is one by which a cut of the lighter fractions of the high-gravity crude is removed before the oil is transported to storage or to the refinery.

It is a difficult thing to retain the lighter fractions in a medium gravity or light-gravity oil. Not only must these gases be kept confined in the stock tanks on the lease, but throughout the whole system. The large surface area of the tops of 55,000-bbl. storage tanks makes it impossible to carry more than one-half pound vapor pressure. A fair measure of success in the direction of stabilizing high-gravity crude is reported to have been attained by removing the lighter fractions, vaporized at a temperature of 90 to 120 degrees at the vacuum carried on the tower, thus reducing the loss from evaporation. The vapors removed are condensed into gasoline. This gasoline then is blended with casinghead gasoline, making the latter more stable.

In The Oil and Gas Journal of November 4, 1926, Paul L. Gaurin tells how the Anglo-Persian Oil Co., operating in foreign regions, has installed a process for stabilizing by which it passes the crude oil through a heat exchange in which the temperature of the oil is raised to 110 degrees Fahrenheit. The crude then is introduced near the top of a tower filled with grids having a large total surface area. The oil moves by gravity down through the grids and is drawn off in a stabilized condition near the bottom. The gases are drawn off under vacuum from the top of the tower, compressed and then condensed into gasoline which is used for blending purposes at the refinery.

Open tanks formerly were used and as a result the lighter fractions of high-gravity oils stored in them were lost by evaporation. That is to say, the oil was being "topped" by natural forces, but the fractions taken off were lost. The question naturally arose, "Why not take these fractions off ourselves and save them?" The answer was the "topping," or stabilizing, process as applied to crude oil.

It is regarded as likely that the "topping" process will come to be used even more widely in the United States as a means of diminishing loss from evaporation in cases where the crude must be subjected to long storage or be transported long distances. Evaporation losses in field storage and transportation to refinery have been found to reach 4 and 5 per cent where the oil is of high gravity.

BREATHER TANKS

I recently read about a new oil tank called a breather tank that has a top which rises and falls in accordance with the expansion and contraction of the contents. Do you know if this tank works? —W. O. C.

The tank to which you refer is the Wiggins breather tank. Several of this type have been installed in the Seminole area and they are understood to be operating satisfactorily. The concave top is flexible, and it rises and falls according as the tank contents expand or contract.

AVERAGE LIFE OF WELLS

What is the average life of a well on the gas lift in the Seminole area? Are any figures available indicating the average life and average daily production of oil wells in older fields of the country where the gas lift has not been used?—J. N. P.

Answering your first question, relating to the average life of a well on the gas lift in the Seminole area, it depends on the policy of the operating company. Some companies flow wells having only 10 or 15 bbls. production a day, while others place them on the pump when production has declined to, say, 100 bbls. a day. In general, the average life of gas-lift wells in the Seminole Field is approximately six months. Some wells in the Seminole City Pool have been on the gas lift for a year or more.

Your second question, regarding the average life of wells throughout the country, is similar to one answered on this page on November 10, 1927, and it is necessary to say, as was said to L. F. C. at that time, that for practical purposes there is no such thing as an average well. If we confine our attention to producers from a certain sand in a certain pool, investigation will disclose something like an average well. When we go beyond that our calculations yield uncertain results, of very doubtful value, since "average lives" differ as between different fields and as between different sands in the same field.

However, giving you such information on this point as is available, statistics compiled by the United States Geological Survey in 1920 go to show that the average life of oil wells in the Appalachian Field was seven years, in Texas fields four years and in California fields seven years. The average daily production of all wells in the United States at that time was 4.9 bbls. West Virginia has wells which are reported to have produced on the pump more than 100 bbls. of oil daily for almost half a century. Some wells in the Appalachian Field have produced oil uninterruptedly for more than 35 years. Since these figures were obtained wells in California and the Mid-Continent area have upset all the carefully worked-out results of statisticians.

MEASURING WELL PRODUCTION

I would like to know if you have any information concerning a suitable type of oil meter which may be used for measuring well production after it leaves the gas trap. Such a type of meter would be of much value in making it possible to get accurate production records without the necessity for individual tanks for wells. —N. A. M.

A meter such as you describe was built several years by a manufacturing company in California. Several field tests were made. The results of these tests were not satisfactory on account of the gas still remaining in the oil after leaving the oil and gas separator, practically all measurements being high. Releasing the gas pressure in the oil and gas separator tended to give readings more nearly the actual volume although they were still high. It is understood that this difficulty has been overcome by providing a release on the meter for the escape of gas. The meter is of the piston displacement type. Tests made with the type used in the field tests mentioned on oil containing no gas were very satisfactory and the volume of liquid under varying rates of flow and varying temperatures was shown to a high degree of accuracy for practical purposes.

Parkersburg

HAS SERVED THE OIL FIELDS OF THE WORLD FOR THIRTY-ONE YEARS

1928

ON New Year's Day one looks forward in pleasant and hopeful anticipation to what the coming year will bring--in retrospect of what the Old Year has given. It is the day for the annual inventory of Life.

In looking back over our thirty-one years of service to the Oil Industry throughout the world, it is obvious that, when each year adds new customers who become old friends, there is evidence of better-than average quality, and something more than just formal service.

Permanency in business is a matter of permanency in friendships--friendships that are realities, secured and enriched by the passing of years, through a Service conducive to Goodwill.

We value our friends and trust that we may continue to serve them in a manner worthy of their esteem.

So with the dawn of a New Year we extend to them a New Year's Greeting--We sincerely hope that the Good Ship Nineteen Twenty-Eight will bring them Health, Happiness and Prosperity. The Happiest of New Years.

The PARKERSBURG RIG & REEL COMPANY

Executive Offices & Main Plant, Parkersburg, W. Va., U. S. A.

Sales Offices Maintained and Stocks Carried in Every Producing Field

MEN KNOWN IN OILDOM

Paul M. Gregg

Of pioneer stock, Paul M. Gregg claims Independence, Inyo County, California as his birthplace, though the Gregg family later made its permanent home in San Luis Obispo, one of the older of the California settlements. Here his father was a prominent and successful attorney and for years a judge of the Superior Court. The son received his early education in the public schools and entered Stanford University when that institution first opened its doors in 1891. His father's professional experience doubtless influenced Mr. Gregg in the choice of his profession, and with the establishment of the law school at Stanford he began his legal study, graduating in 1895 with the first four-year class, and being admitted to the bar the following year. Until Judge Gregg's death in 1899, father and son were associated in the practice of law in San Luis Obispo, and Mr. Gregg continued his legal practice there for several years. Mr. Gregg was widely known as a public-spirited citizen in the community and as a successful attorney, and he severed professional connections of long standing when he came to Los Angeles as a member of the law firm of Andrews, Toland, Gregg and Andrews in 1920. A year later he withdrew from that firm to become counsel for the Union Oil Company of California and to devote his entire time to the legal affairs of the corporation.

In addition to directing the legal work of the company, Mr. Gregg has served as personal assistant to E. W. Clark, executive vice president.

PERSONAL PARAGRAPHS

K. B. Ris has moved from Tulsa, Okla., to Dallas, Tex.

* * *

Owen A. Wood, of Amarillo, Tex., is now in Fort Worth, Tex.

* * *

Bond Coleman, of Toronto, Ontario, is now in Mound City, Kans.

* * *

C. F. Drake, recently in San Angelo, Tex., has moved to Dallas, Tex.

* * *

John J. Dailey has removed from Panhandle, Tex., to Sapulpa, Okla.

* * *

Will Husbands, formerly of Durango, Colo., is now in the Artesia, New Mexico, Field.

* * *

W. L. Walls, counsel for the Continental Oil Company in Denver, Colo., and formerly attorney general of Wyoming, was a recent visitor to Casper, Wyo.

Bob Violet will be in charge of the legal division of the Texas office of the Independent Oil & Gas Company.

* * *

R. J. St. Germain, of Tulsa, Okla., has returned from an extensive trip through West and Southwest Texas.

* * *

M. M. Valerius, geologist and oil producer of Tulsa, Okla., is spending the holidays at his old home in Iowa.

* * *

J. E. Huff, oil producer of Tulsa, Okla., was called to Evansville, Ind., by the death of a member of his family.

* * *

W. B. Long, who has been in Hong Kong, China, has returned to the United States and is now visiting in Mina, Nev.

* * *

John King, of the Cortez Oil Company, has returned to Tulsa, Okla., after a two months' absence spent in traveling.

* * *

M. G. Brennan, representing the Stearns-Roger Manufacturing Company of Denver, Colo., was a recent visitor to Casper, Wyo.

* * *

Page Hamm, of W. J. Wollman & Co.'s Tulsa, Okla., office, is spending the Christmas holidays with his family in New York.

* * *

M. J. Flanagan, of the Gaso Pump & Burner Company, of Tulsa, Okla., is spending the holidays with relatives in St. Louis, Mo.

* * *

Harry L. Nolan, sales manager of the Continental Supply Company of St. Louis, Mo., is convalescing after an attack of influenza.

* * *

W. G. Heltzel, of the Sinclair Pipe Line Company of Tulsa, Okla., is taking a long-delayed vacation and visiting eastern points.

* * *

Chester L. Wann, oil operator in the Bradford, Pa., Field, and Mrs. Wann are in Tarpon Springs, Fla., where they will spend the winter.

* * *

Earl Hays, of Wichita, Kans., spent a few days visiting relatives at Okmulgee, Okla., where he was formerly engaged in the oil business.

* * *

J. W. Steele, supervisor of the mineral leasing division of the United States Geological Survey, has returned to his Casper, Wyo., offices.

* * *

Jack E. Kelley, one of the earlier operators of the Wichita Falls, Tex., district, and son, Earl, of Abilene, Tex., are visiting old friends there.

* * *

W. H. Fuller, warehouse superintendent for the Continental Oil Company, at Casper, Wyo., will spend a Christmas vacation in Kansas City, Mo.

* * *

C. C. Herndon, in charge of the Smith Separator Company's Houston, Tex., force, is spending the Christmas holidays with relatives at Tulsa, Okla.

* * *

H. P. Ferree, secretary of the Continental Oil Company, is reported to be much improved from the illness which has kept him confined to his home in Denver.

* * *

Clark Kountz, vice president of the Prairie Pipe Line Company, journeyed from Independence, Kans., to Tulsa, Okla., last week to visit the Tulsa offices of his company.

* * *

Fred K. Haskell, general manager of the Empire Pipe Line Company, has returned to his headquarters at Bartlesville, Okla., after a two weeks' trip to the East.

* * *

C. W. Hanley, general agent for the Gulf Production Company in the Wichita Falls, Tex., zone, is spending a few days on business in southern Oklahoma points.

* * *

George S. Rollin, general superintendent of the Kansas-Oklahoma-Panhandle district, of the Roxana Petroleum Corporation, has been made vice president and transferred to St. Louis, Mo., the general executive office of the Roxana, and Ralph Benedict Roark, one of his assistants, was made general superintendent.

W. L. Greiner, chief auditor for the Midwest Refining Company, visited the Casper, Wyo., offices for a few days recently. Mr. Greiner's headquarters are in Denver, Colo.

* * *

W. W. Cary, former superintendent of pressure for the Ohio Fuel Gas Company, is now commercial manager for the Logan Gas Company, with headquarters at Newark, Ohio.

* * *

Arthur Moore, formerly with the International Boring Company, of Brisbane, Queensland, is now connected with the New Guinea Oil Company of Sydney, New South Wales.

* * *

Barry Sullivan, district manager of the Union Tank & Pipe Company, of Los Angeles, Calif., has returned to his Fort Worth, Tex., headquarters from the Panhandle.

* * *

Mr. and Mrs. A. W. Peake have been visiting friends in Washington, D. C., and New York City. Mr. Peake is superintendent of operations for the Midwest Refining Company.

* * *

C. Ellis Smith has resigned as purchasing agent of the Gilliland Oil Company. After the first of the year he will be associated with the Bradford Motor Works of Wichita Falls, Tex.

* * *

A. W. Ambrose, head of the production department of the Empire Gas & Fuel Company of Bartlesville, Okla., and J. M. Shaffer, general superintendent of production, visited Tulsa, Okla., last week.

* * *

Ray Phebus, geologist and one of the organizers and officials of the Oil Fields Power Company, which is furnishing electricity for drilling to the Oregon Basin Field, was in Casper, Wyo., last week.

* * *

The government of the French Republic has bestowed on T. C. J. Burgess the dignity of the Legion of Honor, in recognition of eminent services rendered as managing director of the London & Thames Haven Oil Wharves, Ltd.

* * *

A. T. Coumbe, Jr., of the Bureau of Mines, Bartlesville, Okla., spent several days last week in Tulsa, Okla. In January, he will start a survey for the Government concerning the distribution of fuel oil by refineries covering 1927.

* * *

Harry C. Scott, for the past 10 years tank superintendent for the Puritan Oil & Refining Company, is now superintendent of transportation for the Hope Natural Gas Company, with headquarters at Charleston, W. Va.

* * *

E. H. Leroux, president of the Oklahoma Pipe Line Company, who has headquarters at Muskogee, Okla., was a Tulsa visitor last week. He was accompanied by Robert Sparrowhawk, division superintendent of the company.

* * *

W. W. Klingensmith, traffic manager of the Transcontinental Oil Company, Tulsa, Okla., is back at his desk following recovery from an illness which necessitated a stay of several weeks in the Mayo Brothers Hospital, Rochester, Minn.

* * *

Mr. and Mrs. Carl K. Dresser, who were recently married in New York, have arrived in Tulsa, Okla., where they will make their home in Sophian Plaza. Mrs. Dresser was Miss Gloria Jack, daughter of the late Johnson Jack, oil producer, of Bradford, Pa.

* * *

Gilbert Wood, who for the past several years has been in charge of the Kansas land office of the Independent Oil & Gas Company, has been named chief of the Texas office at Fort Worth in place of C. F. Kelsay, who recently resigned to enter the oil business on his own account.

* * *

L. V. Hass, engineer for the Graver Corporation, spent two days in Tulsa, Okla., on his way to the company's offices in Chicago. Mr. Hass has been in Japan for the past year helping in the construction and operation of the Schultz vacuum stills installed at the Agura Oil Company's plant at Tokyo and the Nippon Oil Company's plant at Niigata. On December 19 he was married to Miss Odella Shay of Okmulgee, Okla.

The Governor and the Governor

His many friends throughout Wyoming and elsewhere will recognize Governor Frank C. Emerson of Wyoming among the gathering for the start of drilling operations with an **"OILWELL"** Hild Differential Drive on the Charles E. Orchard Well in Oregon Basin, Wyoming. Mr. Orchard appears at the extreme left, and the others, reading left to right, are Mr. J. M. Schwoob, Mr. Arthur K. Lee, and Mr. Paul Stock.

Governor Emerson is ready to start the outfit by turning the Governor Control Wheel which starts, stops and governs the speed.

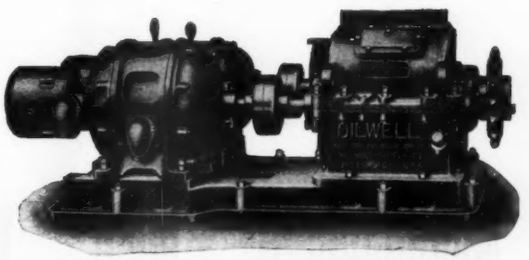
In every rotary field where electric power is available, **"OILWELL"** Hild Differential Drives are gaining in favor.

With this device the bit is automatically fed and automatically retrieved or lifted upon suddenly encountering hard formations.

Additional advantages include—faster drilling, straighter hole, cheaper drilling as there is less wear and tear on the equipment, deeper drilling range, and uniform feed regulation for coring.

Any of our 100 Branches will be glad to supply detailed information

"OILWELL" ESTD 1862 TRADE MARK REGISTERED



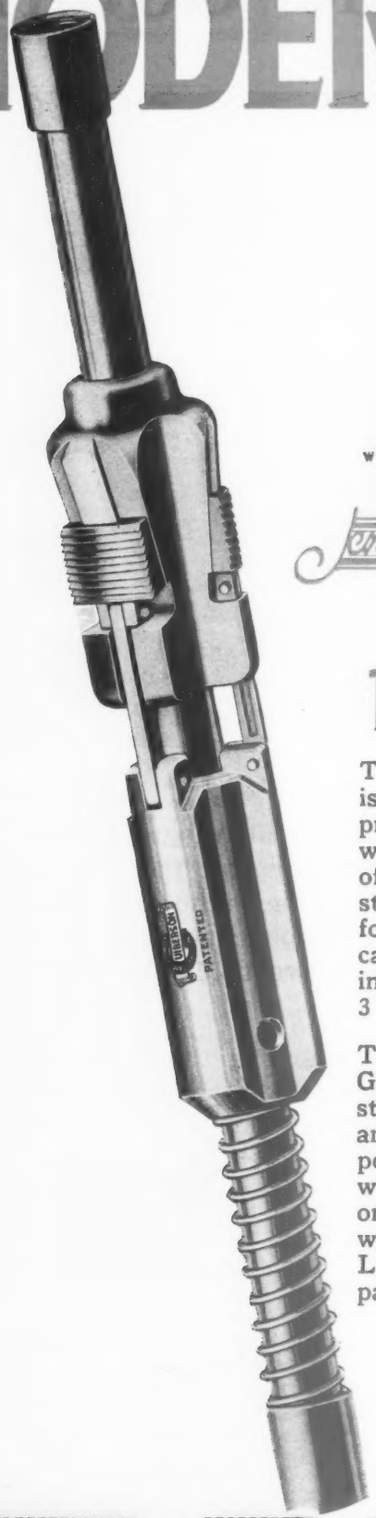
"OILWELL" Hild Differential Drive
(Licensed by Halliburton)

OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

MODERNIZING THE



North, East, South and West . . wherever petroleum is produced . . GUIBERSON patented specialties are playing an important part in modernizing oil field methods.

Each GUIBERSON specialty has been designed by practical petroleum engineers . . is painstakingly manufactured from the most suitable materials . . and is unconditionally guaranteed by one of America's pioneer makers of oil field tools.

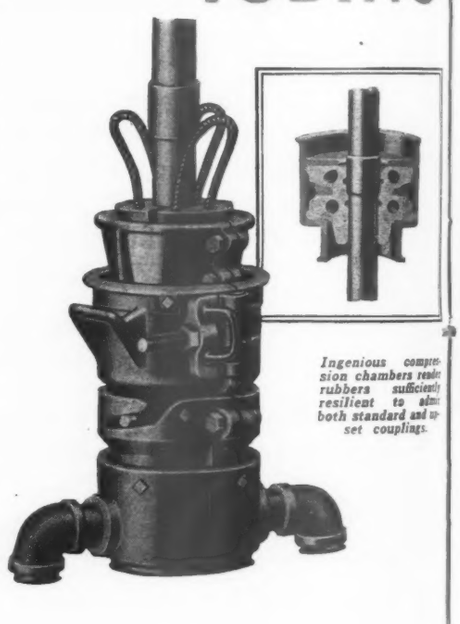
GUIBERSON Tubing Catchers . . Swabs . . Underreamers . . Bottom Water Plugs . .

TUBING CATCHER

The GUIBERSON Tubing Catcher is a remarkably successful device for preventing tubing from falling in the well. It is inserted as a short section of tubing, near the bottom of the string, and hangs free. Whenever, for any reason, the tubing falls, the catcher automatically grips the casing walls and stops the fall within 3 inches.

Three necessary features in the GUIBERSON Tubing Catcher — a strong spring, heavy striker weight and dovetailed tracks for slips—give positive assurance that this catcher will function dependably at any time or in any position, regardless of whether or not catcher is in the fluid. Lasts for the life of the well. Fully patented.

TUBING



Ingenious compression chambers render rubbers sufficiently resilient to admit both standard and upset couplings.

GUIBE

WORLD'S OIL FIELDS

Control Head and Spiral Packers . . Casing Tongs . . Tool Joint Tongs . . Multiple Sucker Rod Sockets . . Casing Oil Savers . . and Tubing Strippers . . are distributed in all markets. Your order to the export division of any of the leading supply companies will insure prompt deliveries. Or full information may be obtained from

THE GUIBERSON CORPORATION
Box 1106, Dallas, Texas
402 W. First St. TULSA
321 S. Osage PONCA CITY
506 Trust Bldg. NEWARK, O.

STRIPPER

The recently developed GUIBERSON Tubing Stripper strips the tubing DRY and provides a tight seal at all times—yet permits collars to pass readily without tearing the rubbers.

The Stripper is simple in design, and is easily and quickly handled. It is made in two halves, hinged, with handy latch for closing around pipe. Locks instantly in the adapter. Joint between halves is packed with square flax packing which is permanently fixed in groove and cannot blow out. Handles can be used for tie-downs.

The lightness, efficiency and low cost of this stripper recommend it to operators for use in preventing loss of oil and gas, and in safeguarding men and property.

TYPE "E" SWAB

Several years ago the GUIBERSON Swab introduced a new, better principle in swabbing, and promptly set new standards of efficiency. Today we estimate it is doing over half of the world's swabbing.

Its primary advantages are (1) its ability to bring up the full load with which it starts, due to its use of cups instead of solid rubbers, (2) the ability of its flexible cups to pass through kinked or partially collapsed casing without injury, (3) the ease and speed with which it runs in the well, without need of weighting or jarring.

Simple in design. Sturdy in construction. Fully patented.

RSON

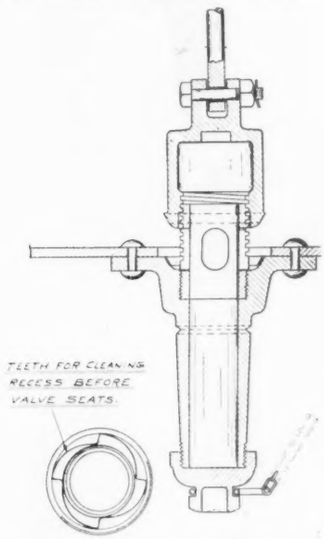
EQUIPMENT AND SUPPLIES

Additional equipment news will be found on pages 92 and 206.

WESTCOTT TAKES OVER HUTCHINGS INVENTIONS

The Westcott Valve Co., of St. Louis, Mo., announces that it has taken over the manufacture and distribution of a series of valves invented by Joseph L. Hutchings, of Olean, N. Y.

The valve shown above is a tank car valve incorporating novel features. It



may be operated from the bottom of the tank car or from the top. According to the inventor it can be installed in any tank car without changing the flange and with the existing equipment, and in case of wreck all exterior connections may be broken off without impairing the valve.

The other Hutchings valves are designed for the producing end of the oil business and all feature the inside locking arrangement which reduces the likelihood of freezing.

PUMP MANUFACTURING COMPANY REORGANIZES

The F. E. Myers & Brother Co., Ashland, Ohio, manufacturers of pumps and hay tools, has been reorganized with an authorized capital stock of $3,000,000 in 6 per cent cumulative preferred stock and 200,000 shares of no par common stock. The management of the company will remain unchanged. The officers are: P. A. Myers, president; John C. Myers, Guy C. Myers, A. N. Myers and G. D. Myers, vice presidents; and F. B. Kellogg, secretary and treasurer.

The company employs more than 700 persons in its Ashland plant. Some of the capital stock is to be sold to the public. The additional capital acquired will be used for expansion.

"It will be the policy of the company," said President P. A. Myers, "to develop and to make the industry an even more important factor than ever before. We are enjoying a steady volume of business and the outlook for the coming year is very favorable."

TRANSFERRED TO NEW YORK

The Lincoln Electric Co., Cleveland, Ohio, announces the transfer of E. F. Hoff from the welder division at Cleveland to the welder division at New York where he will be in charge of welder service under the direction of G. N. Bull, district manager.

CHICAGO OFFICE MOVED

The Hazard Manufacturing Co. of Wilkes-Barre, Pa., manufacturers of electrical wires and cables, has moved its Chicago office to 1840-1842 Midland Building, 168 West Adams Street, Chicago. The Chicago office and warehouse of the Hazard Wire Rope Co., manufacturers of wire rope and wire rope fittings, now distinct from the Hazard Manufacturing Co. will be retained at 32 South Clinton Street.

FACTS ON INSULATION

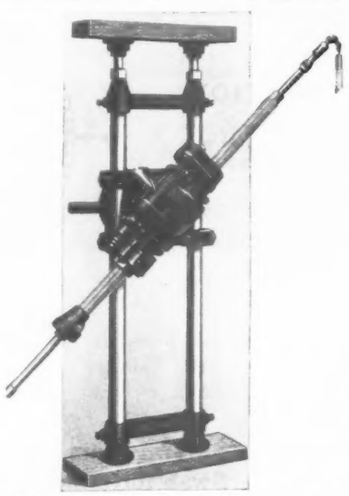
A new insulation handbook, entitled "Facts and Figures on Insulation" has just been published by United Cork Companies, Lyndhurst, N. J. It is of standard filing size and bears the American Institute of Architects file number A. I. A-37-a-1 for ready file reference. The book was prepared to supply the refrigerating industry and others interested in insulation with dependable data about pure corkboard and the modern methods of its erection.

HIGH TEMPERATURE INSULATION

The Celite Products Co., Los Angeles, is sending out copies of its lecture on "High Temperature Insulation" for 1927-28. This lecture is being used by about 50 engineering schools throughout the country this year. It includes data on methods of measuring heat flow through walls as well as temperature gradients and heat losses through typical insulated and uninsulated walls. Drawings are included showing methods of insulating various types of high-temperature equipment, such as boilers, furnaces, blast furnace stacks, open-hearth regenerators and flues, etc.

"BABY TURBINAIR" FOR SHALLOW PROSPECTING

Two bulletins describing diamond drills, one describing a bottom-discharge core barrel and one describing blue rods and bull rods adapted for oil field work in connection with the diamond drill have been issued by the Sullivan Machinery Co., Chicago. The bottom-discharge core barrel is an oil field barrel, especially



designed for very soft formation and for the use of mud fluid. Special construction of the barrel and of the bits prevents grinding of the drill core and also washing away of the core. At no time is the core in contact with the drilling water.

The "Baby Turbinair" is offered as the latest development in a light, portable diamond core drill for shallow prospecting underground. It is similar in most respects to the standard Sullivan "Turbinair," except that the hoisting apparatus has been left out, permitting an important reduction in weight.

The company's Bravo 300 diamond drill, operated by hand, gasoline engine or electric motor, has been used in some oil fields, notably in India and Borneo, for shallow structure testing, where transportation is difficult.

WILL REPRESENT CAMERON

F. T. Patterson, 416 Kennedy Building, Tulsa, Okla., has been made representative in the Mid-Continent Field for the Cameron Tool & Supply Co., Cameron, W. Va., manufacturers of drilling and fishing tools and other oil well supplies.

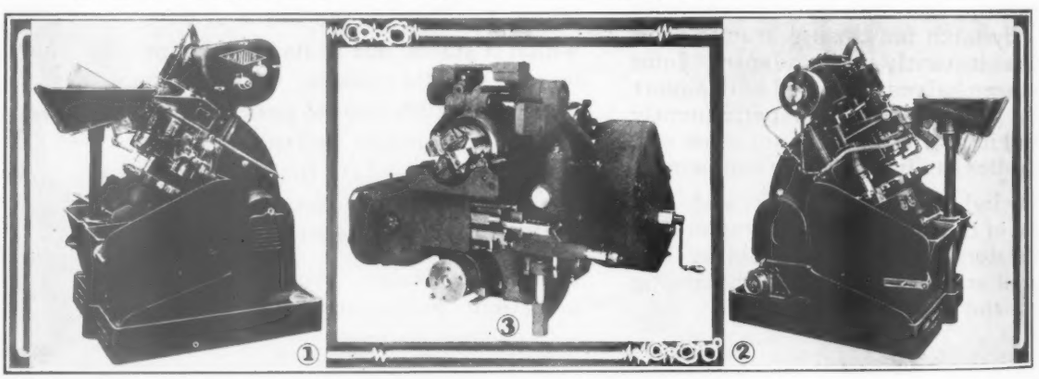
SPECIAL REPRESENTATIVE

Van Cortright Mekeel, formerly connected with Taylor-Wharton Iron & Steel Co. of High Bridge, N. J., as special research investigator, mechanical engineer and sales engineer, has resigned to accept a post as special representative of the Nugent Steel Castings Co., Chicago.

FROM HOUSTON TO DALLAS

Johns-Manville, Inc., have moved their oil industry department from Houston, Tex., to 1116 Magnolia Building, Dallas, Tex., with E. M. Naylor, special representative, in charge.

LANDIS POINTING AND THREADING MACHINE EMBODIES NEW FEATURES



The Landis Machine Co., Waynesboro, Pa., has placed on the market a machine which it says will accurately, rapidly and economically produce bolts cut to length, pointed and threaded. This is the Landis Automatic Pointing and Threading Machine. Its design and construction are said to insure more bolts per year by reason of a maximum operating efficiency.

New and exclusive features are employed which insure a full thread at the start, a more accurate lead and a minimum amount of taper. These features automatically duplicate the movements of a good operator on a hand-operated threading machine.

The machine employs a special three-fourths-inch Landex head. This is a revolving head of the pull-off type, made of high-grade carbon steel, heat-treated throughout and ground. The time element for the return of the forming and threading heads and indexing of the turret chuck is constant, regardless of the diameter, pitch, length of thread, quality of material, or the threading speed.

The turret chuck has three stations, one for unloading and loading work, one for cutting to length and forming the end of the screws, and one for threading. These operations are performed simultaneously. An ejector is provided at the unloading and loading station which will eject the bolt should it fail to drop from the grips. An exclusive feature is the operation of the chuck jaws, which open and close on a pivot parallel to the bolt. This centralizes and squares the bolt regardless of any variation in size and insures concentricity of the thread with the body of the bolt.

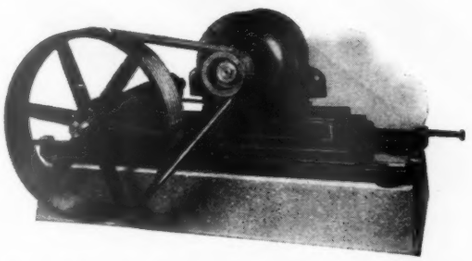
The machine is hopper-fed. Bolt or screw blanks are shoveled by hand or dumped from a traveling bucket into the hopper and delivered to the transfer fingers through a magazine leading from the hopper.

The threading unit is counterbalanced. By this means the advance of the die head on the bolt during the threading operation is uniform and is under control at all times. This insures threads that are correct in lead.

The chasers are flooded by two streams of coolant which is delivered through the threading spindle and also through a nozzle located at the front of the head. The forming tool receives the coolant through the forming spindle. A rotary geared pump is employed to force the coolant to the forming and threading spindles. The reservoir for the coolant is located in the base of the bed.

The machine is provided either belt or motor drive. When belt driven a single pulley drive is employed. When motor driven the motor is mounted in the base of the machine and the power is transmitted to the main driving shaft by means of a belt.

A MOTOR
That Masters the Oil Well Pumping Problem



Complete Allis-Chalmers Single Reduction Pumping Unit—Timken equipped.

Oil Field Offices at

Dallas
Houston
Kansas City
New Orleans
Denver
Los Angeles
San Francisco
El Paso

Western Supply Company
Tulsa, Oklahoma

Cast steel frame with integral feet; prevents breakage.

Roller bearings, grease lubricated; require infrequent attention.

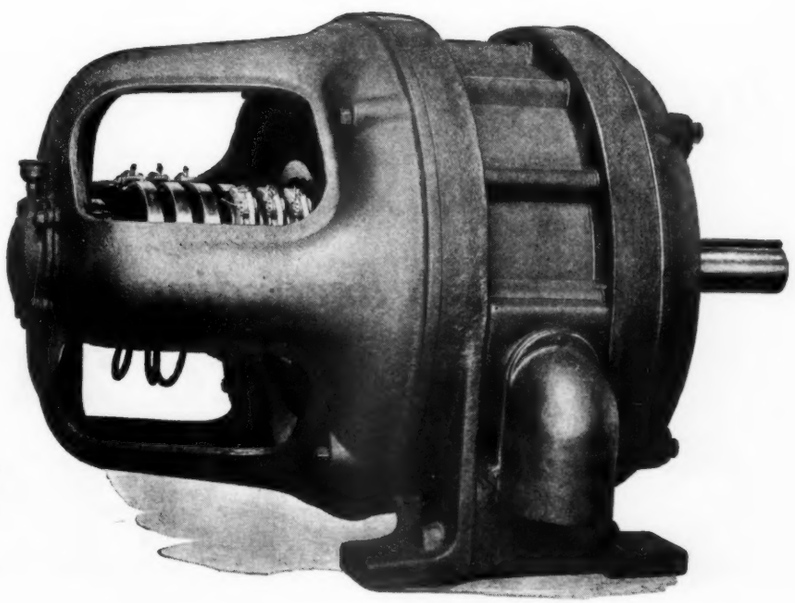
Volume ventilation insures cool operation.

Short stiff shaft.

Rigid bearing housings of unusual strength.

Sealed stator and rotor windings, resistant to:

Corrosive Gases
Salt Air
Oil
Moisture
Dirt

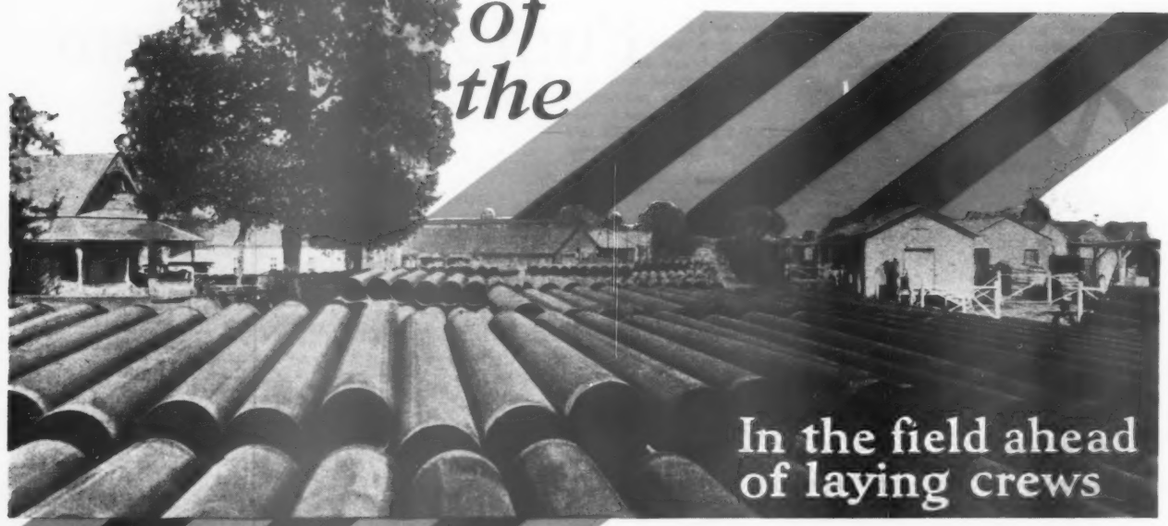


Collector rings on mica insulated cast-iron sleeve.
Cast brass brush holders, tinned to resist corrosion.
Minimum weight, due to extensive use of steel.
Suitable for 50 cycle operation, 40°C.
Reversible, with two speeds, each adjustable in both directions.
Exceptional pull-out torque.
—and all Allis-Chalmers betterments.

ALLIS-CHALMERS
MILWAUKEE, WISCONSIN

CAPACITY

of the



In the field ahead of laying crews

A. O. SMITH CORPORATION
Pipe Mill

has been INCREASED from 4½ to

6 *to* 8 Miles Per Day

according to diameter—

16 to 24 Inch

SMITHSTEEL
GAS LINE PIPE

A. O. SMITH CORPORATION
Oil & Gas Field Products Division
General Offices—Milwaukee, Wis.
District Offices at Pittsburgh, Tulsa, Dallas, Los Angeles

Natural Gas Developments

Bids Are Submitted By Three Companies For Gas in Omaha

By Special Correspondent

OMAHA, Neb., Dec. 24.—The fight of three big gas and oil interests to secure a contract for furnishing Omaha with a supply of natural gas reached a head, when, after a month of figuring, the Knorrp interests, The Texas Company and Columbian Carbon Co., and the Skelly Oil Co., with the Continental-Commercial Trust Co. of Chicago, each submitted bids to the utilities board in Omaha to provide the necessary gas. The Doherty interests, which three weeks ago had asked a postponement of bids until it had an opportunity of "checking up" and submitting its bid, decided not to enter the fight and notified the board that it would not bid.

The prices offered the city of Omaha are said to be much below those in effect in any other city.

The bids submitted by the different interests are as follows:

The Texas Company and Columbian Carbon Company:

Up to 50,000 cubic feet per month, per 1,000 cubic feet	45 cents
From 50,000 to 3,000,000 per month, per 1,000 cubic feet	25 cents
From 3,000,0000 to 15,0000,000 per month, per 1,000 cubic feet	20 cents
Over 15,000,000 per month, per 1,000 cubic feet	18 cents

Skelly Oil Company and Associates

Up to 50,000 cubic feet per month, per 1,000 cubic feet	35 cents
Next 950,000 cubic feet per month, per 1,000 cubic feet	30 cents
Next 2,000,0000 cubic feet per month, per 1,000 cubic feet	25 cents
Next 4,0000,000 cubic feet per month, per 1,000 cubic feet	21 cents
Next 8,000,000 cubic feet per month, per 1,000 cubic feet	19 cents
Next 100,000,000 per 1,000 cubic feet	18 cents
All over 115,000,000, per 1,000 cubic feet	17 cents
Loss and unaccounted for, per 1,000 cubic feet	25 cents

Kansas City Texas Company (Knorrp Int.):

Up to 100,000 cubic feet per month, per 1,000 cubic feet	40 cents
Next 900,000 cubic feet per month, per 1,000 cubic feet	31 cents
Remainder, per month, per 1,000 cubic feet	20.5 cents

These prices would permit of no reduction to the ordinary household consumer from the present prices of manufactured gas, but the increased number of B.t.u. in the natural gas over the manufactured article, may affect the amount of gas used and in this manner benefit the consumer.

The Knorrp interest expects to tap a line now in use to Kansas City, somewhere near Council Grove, Kans., and bring the gas to Omaha in an 18-inch main.

The Texas-Columian Carbon Co. proposed to bring a 24-inch main direct from the Amarillo Field, making a stop at Lincoln, Neb., only, between the field and Omaha.

The Skelly Co. offered a 500-mile line direct from the field to Omaha, without stop the entire distance.

The bids were referred to the engineering department for tabulation and study.

The Knorrp bid was rejected at the outset and only the Texas-Columbian Carbon and the Skelly-Continental, are to be considered.

Omaha citizens are much excited over the proposed substitution of natural for manufactured gas and meetings are being held all over town to consider the proposition. Most of these meetings are meetings of "protest". Business organizations, for the most part, are favoring the change.

Gas for Omaha is furnished by a municipally owned company and the city still owes more than $1,000,000 on the plant.

EDMONTON GAS OPERATIONS

CHATHAM, Ontario, Dec. 24.—A recent statement covering the operations of Northwestern Utilities, Ltd., of Edmonton, Alberta, shows that the company, launched as a new enterprise four years ago, has grown rapidly. Gas was first delivered to Edmonton in November, 1923, the company starting with 250 consumers. At present it has 8,398 service installations in Edmonton homes, and 120 miles of mains in the city. Over 75 per cent of the homes in districts where gas is available are equipped for this fuel. About $5,000,000 was spent in Edmonton and the surrounding district. The company has 14 producing wells in the Viking Field, with an aggregate open flow of around 70,000,000 feet a day. C. J. Yorath is president and general manager.

WINKLER COUNTY GAS SUPPLY FOR EL PASO

Natural gas producers in the Winkler County Field, Texas, have entered into tentative contracts for sale of gas to a pipe line to El Paso, 220 miles. Engineers are making surveys for the proposed line and when their estimates of cost are submitted to promoters of the project it will be determined whether the undertaking is feasible.

One factor to be considered is whether the 3 per cent sulphur content of the gas renders it unfit for domestic uses.

Pacific Coast interests are said to be behind the proposed pipe line and negotiations for franchise have been taken up with Mayor Thomason of El Paso. The line will cost about $5,000,000 and plans are also to supply gas to several towns in New Mexico.

PAMPA-WICHITA LINE NEARING COMPLETION

WICHITA, Kans., Dec. 24.—Only 2,000 feet of pipe remain to be laid on the Empire company's 20-inch natural gas line that is being built from Pampa, Tex., to Wichita, at a cost of $20,000,000.

Quicksand formations southwest of Wichita delayed construction but this obstacle is being overcome rapidly.

The approximate time of arrival of natural gas through this line to Wichita is set at January 1, depending upon tests to be made at the Wichita compressor station, 4 miles south of Douglas Avenue on the Seneca Road. The plant is costing approximately $1,000,000. The station includes a natural gasoline extracting plant with a capacity of 24,000 gallons daily.

J. H. Richardson, formerly superintendent of the company's Welda, Kans., station, has been placed in charge of the Empire plant at Wichita.

Tests have been made on gathering lines and in the main lines as far north as the Canadian River and the tests are continuing northward as far as possible.

Completion date for the Pampa, Tex., compressor station was set for today and work is progressing rapidly. M. W. Hanna, formerly a superintendent at Bristow, Okla., has been assigned as superintendent at the Pampa station.

Gas was run through the Ottawa station on December 7. John Frederick, formerly employed at the Petrolia station, is superintendent here.

Completion date for the Mooreland, Okla., compressor station is fixed at January 1, 1928. O. W. Price, former superintendent at Hogshooter, Okla., is the new superintendent at Mooreland.

GAS FOR GOOSE CREEK

Houston Natural Gas Co. has been granted a franchise to pipe and distribute natural gas in Goose Creek, Harris County. Service will begin within 60 days.

DIXIE GAS PURCHASES SOUTHWESTERN GAS CO.

SHREVEPORT, La., Dec. 26.—Although the deal was consummated six weeks or two months ago, official announcement of the sale of the Southwestern Gas & Electric Co.'s gas franchise and properties in Beaumont, Tex., was not made until this week. The Dixie Gas & Utilities Co., distributing agency of the Dixie-Gulf Gas Co., the holding company of the Moody-Seagraves gas interests in Texas and Louisiana, will take over the properties from the Insull company January 1. The price figuring in the deal is reported to have been $1,500,000 but this and other details of the trade have not been learned at the local headquarters of either company.

Shortly after the Insull interests acquired the Southwestern Gas & Electric Co. from the Dawes family it was merged with Insull's East Texas Light & Power Co. during the past summer, and the electric generating and transmission plants are now interconnected serving over 90 communities in East Texas, northeast Louisiana and southwest Arkansas, the merged companies operating as the Southwestern Gas & Electric Co.

About the time this transaction was coming to light, it was intimated that the Insull company was planning to get rid of all of the gas interests operated in connection with the electric light and power business of the Southwestern, and in connection with the Beaumont deal unofficial statements credit the Empire Gas & Fuel Co. with purchase in Chicago recently of the gas properties and distributing system of the Southwestern in Shreveport. Unconfirmed but generally accepted reports current here for the past two weeks are that the Empire and Arkansas Natural Gas Co. have got together for the purchase of the Benedum & Trees properties serving Arkansas communities along the Missouri-Pacific main line in Arkansas from Texarkana to Hot Springs and Little Rock with a branch line to Pine Bluff.

In this there are seen probabilities of the Public Utilities Corp. of Arkansas, a subsidiary of the Natural Gas & Fuel Co., which in turn is a twin of the Empire Gas & Fuel Co., connecting the former's 10-inch gas line from the Clarksville gas field in Johnson County, Arkansas, with the Arkansas Natural Gas Co.'s 16-inch line from Caddo Parish at Little Rock. The Public Utilities Corp.'s line is under construction from Clarksville to Conway, 75 miles down the Arkansas River toward Little Rock. Between Conway and Little Rock there is a gap of only 40 miles.

HAMILTON GAS COMPANY IS NEW CONSOLIDATION

Natural gas properties in West Virginia and Kentucky have been consolidated by the Hamilton Gas Co. The company, organized under the laws of Delaware, will engage in the production, transportation and sale of natural gas and will own leases on about 62,520 acres of gas lands, of which 41,880 acres are in West Virginia and 20,640 acres in Kentucky. It will have 116 producing wells together with about 48 miles of pipe and gathering lines to transport the gas to the lines of the purchasing companies.

The company has contracts for daily deliveries of gas up to 16,000,000 feet to the Hope Natural Gas Co., a subsidiary of the Standard Oil Co of New Jersey, and 12,000,000 feet to the Inland Gas Corp. At present the company is able to supply about 8,000,000 feet daily to the Hope Natural Gas Co. and 6,500,000 feet daily to the Inland Gas Corp. The price which the Hamilton company receives for the sale of gas to these companies is on a graduated scale. At the present rate of production the company's proven reserves are estimated to be sufficient to meet the requirements of the present contracts for a period in excess of 15 years.

AGREEMENT EXPECTED TO END WASTE OF GAS

LONG BEACH, Calif., Dec. 24.—An end to the city's practice of blowing millions of feet of natural gas into the air for want of a place to store or sell is seen following a conference between city and Southern California Edison Co. officials, at which it was agreed that the power company will utilize up to 10,000,000 feet of city gas per day for its steam turbine plant on Terminal Island.

A new agreement between the city and the Edison company will be drawn up, it was announced, by which the Edison company will get its gas supply from the Long Beach municipal gas department at 11 cents per 1,000 feet, for the first 10,000,000 feet. The present price to the Edison company is 15 cents per 1,000. The domestic rate in Long Beach is 50 cents per 1,000 and city officials are contemplating a plan to boost that rate to $1.

The 15 cent rate will apply for the Edison company on all municipal gas consumed in excess of the 10,000,000 daily minimum, it was said. Although city officials figure a loss of 4 cents per 1,000 feet under the new rate, it is pointed out that the loss will be offset by the greatly increased consumption of city gas at the Edison plant and resultant stoppage of waste of gas which, for several months, has been blown into the air by the municipal gas department.

HOUSTON OIL COMPANY COMPLETES GAS LINE

HOUSTON, Tex., Dec. 24.—The Houston Oil Co. has completed a 39-mile stretch of gas line from a point south of Bay City and extending to Freeport, Tex. The line connects at Bay City with the company's branch to Gulf Hill from the Matilda station at Edna on the southwest Texas-Houston main line and at Freeport with the company's Houston-Freeport branch. This stretch gives the company a loop into Houston, furnishing industries which is serves a double assurance of gas supply.

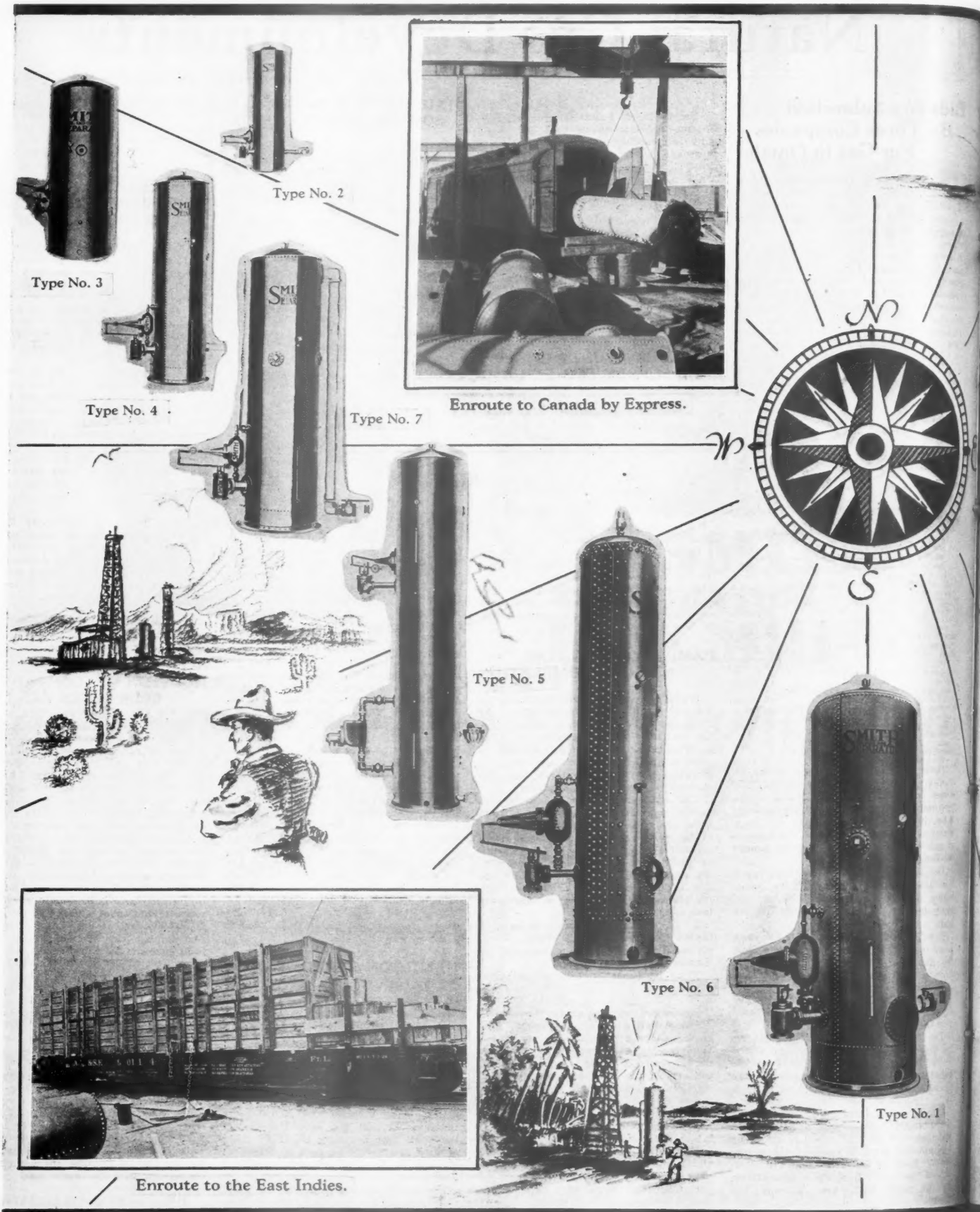
The new stretch is a 12¾-inch line corresponding with the lines which it connects and has a capacity of more than 20,000,000 feet of gas daily. The main line through the Matilda station direct to Houston is 18-inch and has been handling from 75,000,000 to 95,000,000 feet of gas daily.

The main line crosses three treacherous rivers between the Matilda station and Houston and the loop will protect the Houston supply in the event of a break in addition to providing increased available supply with both lines operating.

The company also recently completed an extension of its Refugio line to the White Point Field, a distance of 28.7 miles. This is a 12¾-inch line. The gas from the White Point Field will be carried under its natural pressure to the Refugio Field, where the company has a booster station to force the gas on to a connection with the main line.

LONE STAR CAPITALIZATION

PITTSBURGH, Pa., Dec. 24.—Stockholders of the Lone Star Gas Corp. at a special meeting approved an increase in the capital stock from $30,000,000 to $50,000,000. The additional stock will be issued at the discretion of the directors.



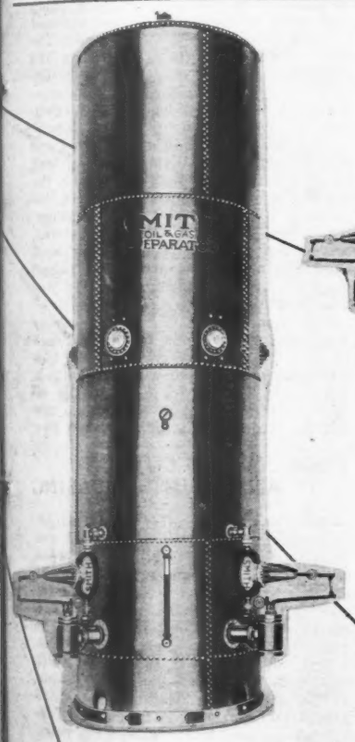
"If it's worth drilling for it's worth saving"

THE SUN NEVER SETS ON SMITH SEPARATORS

From Canada to South America---from California to the East Indies---the Smith Separator may be found in service to the Oil Producer.

"There is a type for every service and a size for every production need."

Type No. 9



Type No. 10

SMITH SEPARATOR COMPANY

Tulsa Okla.

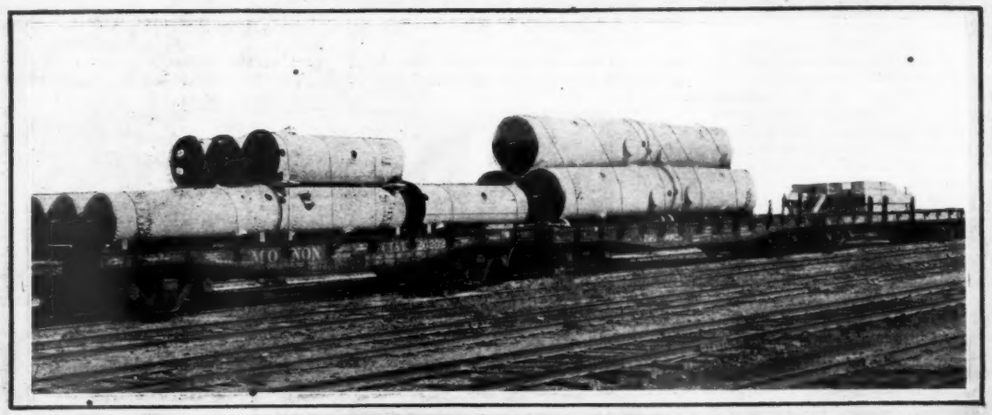
NEW YORK OFFICE: Oil Field Equipment Co., 30 Church St. Cable Address: "Oilfields," New York

CALIFORNIA OFFICE: 2039 East 38th St., Los Angeles, Calif.

LOUISIANA OFFICE: 405 Forest Ave., Shreveport, La.

LONDON OFFICE: Perkins Macintosh Petroleum Tool & Boring Co., Ltd. 25 Bishopsgate Cable Address: "Oleborers," London

TEXAS OFFICES: 924 Post-Dispatch Bldg., Houston, Texas. 1402 Ft. Worth Natl. Bank Building, Fort Worth, Texas



Enroute to South America.

"If it's worth drilling for it's worth saving"

EQUIPMENT AND SUPPLIES

LINCOLN ELECTRIC CO. ANNOUNCES NEW MOTOR

The Lincoln Electric Co. of Cleveland, Ohio, manufacturers of "Stable-Arc" welders and "Linc-Weld" motors, have just perfected a squirrel cage motor for use in various kinds of woodworking machinery and all other machinery requiring high-speed motors.

This motor is of the so-called shell type, an all-welded design, and is made to the standard dimensions of the trade. It is supplied in two sizes, 3-horsepower and 5-horsepower. The 3-horsepower unit has an external diameter of 6.5 inches and an external length of 4.5 inches. The 5-horsepower is of the same diameter and is 6 inches in external length. Both motors are manufactured for either two or three phase, 60-cycle current and a speed of 3,600 r.p.m.

The stator is composed of laminated sections arc-welded together. The welding is done while the shell is under pressure and is placed in six transverse slots. The rotor is also entirely arc-welded and provided with either a straight or tapered bore.

The welding does away with the necessity of a solid shell about the laminations and also replaces the conventional rivets. Thus the amount of active field is kept at a maximum. The effect of this, of course, is to increase the magnetic flux and allow more copper to be used in the slot. Greater magnetic flux means better operating characteristics. This increase of copper makes for a cooler running motor and permits greater overload.

MAKES THE DRILLING TOOLS LAST LONGER

Increased efficiency and economy resulting from the use of Stellite for high-speed cutting tools, cutting and forming dies and the like, have been recognized for years in the metal-working industries, says "Oxy-Acetylene Tips," published by the Linde Air Products Co., New York. It is being realized, however, that an extensive and probably even more profitable application of this alloy lies in the oil fields.

A bit having a hard and lasting cutting edge, backed by a core of metal sufficiently tough to withstand the many strains to which it is subjected, is sought by the oil well driller. A bit designed to meet this requirement is provided by Stelliting the cutting edges of a steel drilling tool. After Stellite has been applied by means of the oxy-acetylene blowpipe, any desired heat treatment may be given the tool to give it the necessary toughness, without impairing the cutting edge, since Stellite retains its hardness even at the temperature required for tempering the parent metal.

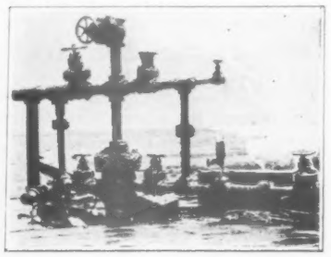
CAMERON COMPANY HAS NEW CONTROL DEVICE

The Cameron Iron Works, Houston, Tex., has developed a tubing control head and blowout preventer which it says embodies safety features of the old blowout preventer and at the same time serves as a control head at the top of the well.

The rams are designed to grip the tubing and withstand pressures up to 750 pounds per square inch. Provisions are made for the insertion of air or gas for pressure lift recovery. The head is equipped with outlets in each side of the body which connect with the casing area, outside the tubing wall. The rams are operated by lever jacks to insure quick closing. In addition to the lever jacks, each ram can be locked in place by a lock screw. The manufacturers assert that by using this control head any kind of well hookup can be effected.

REGAN TUBING HEAD

Typical hookup of a gas lift in the Mid-Continent. View shows hook-up with a Regan Tubing Head, permitting rocking of the well. The oil flow can be brought up through the tubing by running the gas



down between the tubing and casing or the flow can be reversed by manipulating the valves so that the oil can be flown between tubing and casing by running down the gas through tubing.

NEW MACHINE WELDS RANGE BOILER HEADS

A new "stable-arc" carbon arc, automatic welding machine has been perfected by the Lincoln Electric Co. of Cleveland, Ohio. The machine is designed for welding the heads in range boilers.

The tank is mounted on a rotating table in an inclined position. The rotating table is driven by a small variable-speed motor which provides speed adjustment for tanks of various diameters. Roller rests are provided which maintain the alignment of the work. The carbon electrode is carried by an adjustable arm supported from a rigid pedestal on which the motor starter is mounted.

No filler metal is required in this operation, the head being flanged and inserted so that a lap joint is obtained as in a riveted tank. The heat of the arc melts the edge of the lap weld of the cylindrical sheets, fusing it with the head and forming a solid, leak-proof joint.

On 14-gauge material seams have been welded at the rate of 135 feet an hour.

While these machines were developed primarily for welding range boilers, they are equally applicable for welding all kinds of small cylindrical tanks. The cost of making tanks by this method is said to be less than by manual arc welding.

ENGINE COMPANY OPENS THREE BRANCH OFFICES

The Atlas Imperial Diesel Engine Co. of Oakland, Calif., has opened a factory branch office in Houston, Tex., and is about to open another in New Orleans, La., and later a third in Key West, Fla.

The Houston office, in the Electric Building, is in charge of H. H. Hollowell as district manager. He moved there from California. He will be assisted by W. T. Jones, who formerly was connected with the Texas Pipe Line Co. in Houston. The Houston branch will serve all Texas and the Southwest.

The company contemplates erection of a factory warehouse in Houston. It manufactures Diesel engines ranging from 30 to 400 horsepower. The Houston office will specialize in engines for oil field service.

RUSSIA BUYS FIRE EQUIPMENT

Study of the conservation and protection of its vast natural resources has been undertaken by the Union of Soviet Socialist Republics. Modern American methods are being investigated and adopted. Two contracts were placed recently by the Amtorg Trading Corp. of New York, buying agents for Soviet Russia, with the American La France & Foamite Corp. of Utica, N. Y., for equipment to protect an oil refinery and a tank farm in the far off Caucasus. The equipment includes the Foamite two-solution systems, widely used for the protection of similar risks.

ONE MACHINE COMBINES MOTOR AND PUMP UNITS

The type SSU centrifugal pumping units recently brought out by the Allis-Chalmers Manufacturing Co. are combined motor and pump units of simple, compact, substantial design, the complete units being not much larger than a motor alone.

Both the pump and motor parts are built and guaranteed by the same manu-

facturer, so there is no divided responsibility, besides insuring that the pump and motor ends are properly proportioned to work together as an efficient unit. The unit is close-coupled by fastening the pump impeller to one end of the extended motor shaft and the pump casing is bolted to a special integrally cast extension to one of the motor end housings.

This makes a simple construction and eliminates a base plate, coupling, and pump bearings and does away with the possibility of misalignment between the pump and motor. The motor bearings, which are the pump bearings as well, are oversize Timken tapered roller bearings, having ample thrust and radial capacity, and are mounted in dust and grease-tight housings.

The pumps are built in 1¼ inch by 1¼ inch; 1½ inch by 1½ inch; 2 inch by 2 inch, and 2½ inch by 2½ inch sizes and can be used with 1, 1½, 2, 3, 5 and 7½ horsepower motors. The capacities handled range from 25 to 200 G.P.M. against heads of 50 to 100 feet.

TOOL STARTS CUTS AT ANY POINT IN CASING

The principal use of the improved Abercrombie inside cutting tool is in cutting out liner and screen in old wells, so that operators may drill deeper inside the same well without reducing the size of the hole. It has been used successfully to clean out junked holes in which the outer string of casing had collapsed, and to fish strings of casing which had stuck too tight for ordinary fishing.

The outstanding feature of the improved tool is the tripping device in the bottom section which eliminates necessity of going to the bottom of the hole to start cuts. After lowering the tool inside the well to the desired depth, the tool is tripped, anchoring it securely. The operator is now ready to make any number of cuts; and the positive anchorage permits the cutter to track accurately during the cutting. The device is made by the J. S. Abercrombie Co., 616-18 West Building, Houston, Tex.

BUSINESS NOTES

The Prescott Co., Menominee, Mich., has closed a contract for installation of six 60,000-bbl. pumps in the loading station which the Humble Pipe Line Co. is to build in Corpus Christi, Tex. The pumps will be operated against a pressure of 500 pounds per square inch.

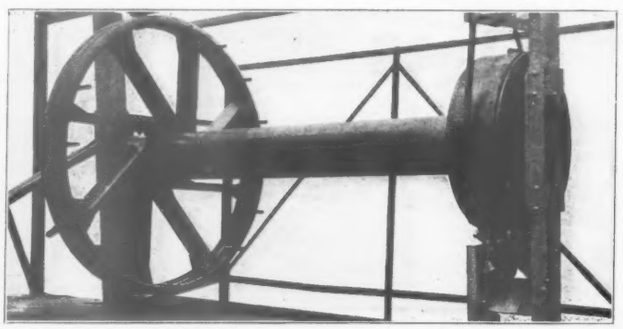
The Indiana Truck Corp., Marion, Ind., has made Herbert H. Swina manager of its export department, which hereafter is to be located at the factory. The foreign business in motor trucks is increasing rapidly and is expected to show tremendous development during the next few years.

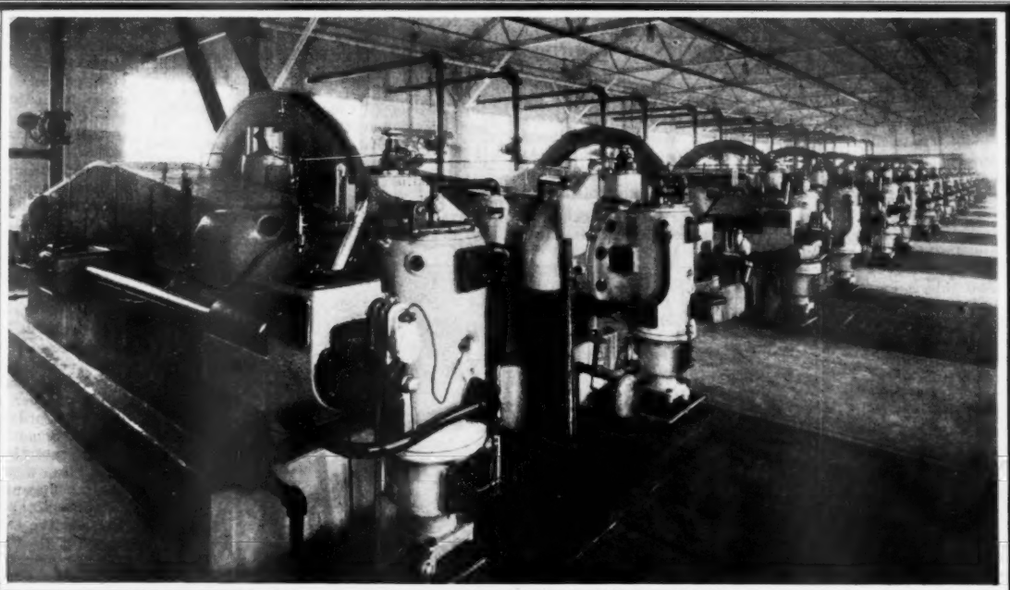
BULL HOIST IS NEW TYPE OF BULLWHEEL

In the bull hoist Ideco engineers say they have developed the greatest improvement in bullwheel construction since the introduction of the steel bullwheel. The bull hoist is not only more powerful than the ordinary bullwheel, but by reason of its compact design, absence of projecting parts, positiveness and ease of control and elimination of the fire hazard it does away with dangerous features of the bullwheel.

Built for heavy duty, the principal feature of this wheel is the air-cooled, compensating brake drum, 42 inches in diameter made of an accurately machined gray iron casting. Through the use of a wide brake face and the arrangement of the brake band and lever mechanisms, together with the high coefficient of resistance between the iron brake drum and the brake band working in dry contact (no water required) Ideco engineers say they have obtained a piece of equipment that is very responsive to the controls and requires little manual effort of a part of the driller.

The tug wheel has a rim made of a single piece of steel with the Ideco deep V groove and rolled edges, and eight channel spokes, riveted to the rim and bolted to the wing plates. Johns-Manville folded and compressed asbestos brake lining, Ideco removable gudgeons, special steel shaft, bull hoist post, wood or iron turning pins and rope dogs and helpers are standard equipment. The wheel is furnished galvanized or painted.





Cooper Engines Adapted to Foreign Installations

The extreme simplicity of Cooper four cycle gas engines make them easy to operate. Cooper standardization and multiple production insures parts being interchangeable even on the larger sizes.

This together with the policy of giving special attention to foreign inquiries and export shipments makes Cooper gas engines and compressors especially desirable for foreign purchasers. Standard sizes range from 50 to 1300 B.H.P. Write or cable for complete information.

The above photograph shows a long row of Cooper type 80 twin four cycle 170 B.H.P. gas engines direct driving Cooper gas compressors in a gasoline plant.

THE C. & G. COOPER COMPANY
Mt. Vernon, Ohio

1111 Magnolia Bldg., Dallas 604 Kennedy Bldg., Tulsa
649 S. Olive St., Los Angeles

COOPER

VENEZUELA HAS LARGE DEVELOPMENT IN FIELDS

(Continued from Page 49)

cent by this company, and 47 per cent by American interests. Indications are that the relative scope of American activity will be further increased in the next few years.

Special Transportation

Before discussing the immediate future prospects of the country, it will be well to explain briefly the course now followed by Venezuelan oil on its way to the world's markets. This involves the question of a special type of water transportation, and a clear understanding of this is necessary for a proper appreciation of the Venezuelan oil situation.

All of the oil (except 1,800 bbls. a day from eastern Venezuela) is now obtained from fields within the Maracaibo Basin. The oil from these fields reaches the lake through pipe lines, or is actually produced along the lake shore itself. Indeed, a large part of the production comes from wells drilled in the water, which are in some cases over a mile from shore.

All of the oil, from whatever field, is transported out of the lake in 11½-foot draft tankers. As may be seen from the map, Lake Maracaibo connects with the Caribbean Sea through a narrow channel, and this outlet is obstructed by the well-known bar of Maracaibo, which prevents the passage of ships of over 11½-foot draft. As a consequence of this transportation restriction, the companies have developed a design of tanker drawing less than 12 feet of water, but with a capacity of about 17,000 bbls. of oil. Barges are used to a minor extent, but the specially designed shallow draft tanker is the big factor in the situation. As the only tankers of the type suited to economical operation on this service must be obtained from new construction, it at once becomes evident that a knowledge of the tanker equipment under order for Lake Maracaibo service gives the figures for increase in output that will be attained when and as these tankers are delivered.

From what is now known concerning tankers under construction for delivery in 1928, it is estimated that the entire fleet capacity average for the year will be increased during the next 12 months by about 25,000 bbls. a day over its capacity at the end of this year. With the present tanker capacity at around 210,000 bbls. a day, it is estimated that the average shipments through 1928 will be at the rate of about 235,000 bbls. per day, or for the year some 85,000,000 bbls. of oil.

Promising Areas

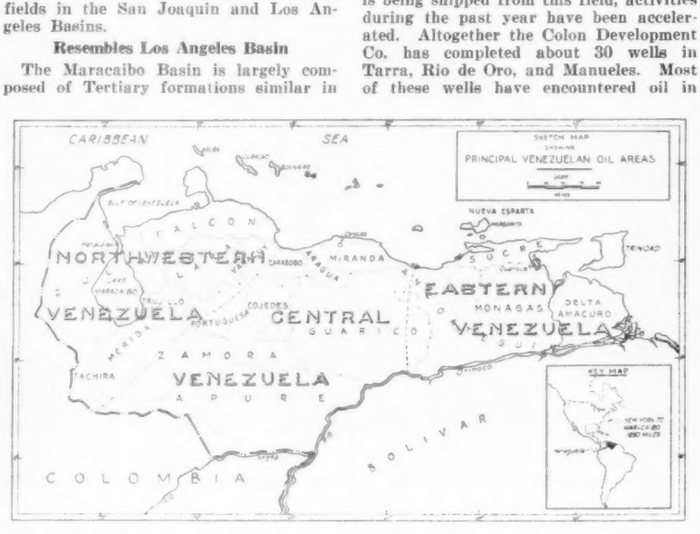
The other factor which might affect this estimate is the possible discovery of commercial production near the sea coast which would permit of a short pipe line haul to deep water. Though there are two promising areas now undergoing development from which such production is expected, it is unlikely that the amount that could be produced during the coming year would have much effect on the estimate. Another factor which at some more distant time, possibly by 1929 or 1930, will have to be taken into consideration, is the question of long trunk pipe lines, leading from the fields on either or both sides of the lake directly to deep water terminals along the north coast. The construction of such lines is becoming more and more an imminent probability, as the reserve oil resources become more accurately appraised.

The deepening of the channel leading into the lake has been considered for years, even before the oil activity. There is, however, a considerable difference of opinion with respect to the economic advantages, and engineering feasibility of such an undertaking. A project now under consideration contemplates the removal of only about 2½ feet from the present channel, allowing the passage of 14-foot draft vessels. It is said that a surprising increase in the capacity of the present type of tankers would thereby be obtained, and likewise the new units constructed could be designed to carry about 50 per cent more than the present approximate maximum of 17,000 bbls.

The area covered by that part of the Maracaibo Basin and adjacent state of Falcon, in which the occurrence of oil is considered possible, is in round numbers about 30,000 square miles, or somewhat less than half the size of Oklahoma. With respect to the mode of oil occurrence, however, there is little in common between the two localities; and an idea of the fields themselves is best conveyed by a comparison with the California fields in the San Joaquin and Los Angeles Basins.

Resembles Los Angeles Basin

The Maracaibo Basin is largely composed of Tertiary formations similar in age and physical characteristics to the California oil provinces. The underlying cretaceous is also known to be of petroliferous character in the Maracaibo region. Though, for the most part, either too highly metamorphosed or too deeply buried under later Tertiary formations to present economic possibilities, it is of commercial importance in the southwest part of the basin where the Tarra and Rio de Oro Fields are being developed. Though the oil sands in these two fields are probably of Tertiary age they are in immediate contact with a cretaceous section which gives ample evidence of being productive. Within the Tertiary itself the productive oil sands range through the entire series from early Eocene to and including the Pliocene.



The fields so far developed are indicated on the map by the hatched areas. The following shows the distribution of ownership:

La Paz, 100 per cent Venezuelan Oil Concessions, Ltd. (Royal Dutch); Concepcion, 100 per cent Venezuelan Oil Concessions, Ltd. (Royal Dutch); Tarra, 75 per cent Colon Development Co., 25 per cent Carib Syndicate; El Mene, 100 per cent British Controlled Oilfields, Ltd.; Ambrosio, V. O. C., Lago, Gulf Oil Co.; La Rosa, V. O. C., Lago, Gulf Oil Co.; Punta Benitez, V. O. C., Lago, Gulf Oil Co. and Creole Syndicate; Lagunillas, V. O. C., Lago, Gulf Oil Co., Venezuela Petroleum Co. and Creole Syndicate; Mene Grande, 100 per cent Caribbean Petroleum Co. (Royal Dutch) 12½ per cent royalty, General Asphalt Co.

Field Development

La Paz and Concepcion are small well fields, which together produce about 5,000 bbls. a day of 28 to 34-degree gravity oil. These two fields have been shut down since March.

La Tarra, the southernmost field in the District of Colon, is in the preliminary development stage. Though no oil is being shipped from this field, activities during the past year have been accelerated. Altogether the Colon Development Co. has completed about 30 wells in Tarra, Rio de Oro, and Manueles. Most of these wells have encountered oil in commercial quantities, and a considerable reserve has been proved. Nothing definite has been made public regarding the construction of a pipe line that would make this oil available for export, but the present extent of the field work suggests the supposition that the construction of transportation facilities is only awaiting a market situation that will justify the cost.

The El Mene Field produced during the year about 2,500,000 bbls. of 35 to 43 degrees gravity oil, the highest grade of the Venezuelan crudes. The wells average in depth from 800 to 1,500 feet, with initial production of about 200 bbls. Slight extensions were made to the proved territory during the year but the pool is probably now completely defined and may be expected to decline during the next year. The British Controlled Oilfields, Ltd., owners of the El Mene Field, control a large surrounding area in which the prospects for finding similar fields appear to be good. Due to this circumstance, it will not be surprising if the company's production in 1928 is well maintained through the discovery of new pools.

La Rosa Field

The fields along the east shore of the lake known as Ambrosio, La Rosa and Punta Benitez may now be considered as one continuous producing area for which the designation, La Rosa Field, seems most appropriate. The La Rosa Field, including Ambrosio and Punta Benitez, now covers an area of proved territory easily 12,000 acres in extent, and with outlying wells being completed every few weeks, this producing area is being continually extended. Only a small part of this La Rosa proved territory has been closely drilled, but in those spots which have been completely drilled the average yield per acre has been high, and the indicated ultimate extraction per acre runs into figures which if applied to the total proved area, would indicate a reserve of several hundred million barrels. In these parts of the field that have been closely drilled, the indicated ultimate extraction runs over 50,000 bbls. to the acre, yet geologically these areas are no more favorable than much of the remaining semiproved area. The wells range in depth from 1,500 to 3,500 feet, and initial productions up to 100,000 bbls. per day have been encountered.

Production at La Rosa is obtained along a west dipping monocline, and as yet developments have not extended eastward for a sufficient distance to determine whether the formations eventually dip eastward over the axis of an anticline. Some evidence has accumulated to indicate that the oil sands lense out in an eastward direction, and grade off into an unconformity.

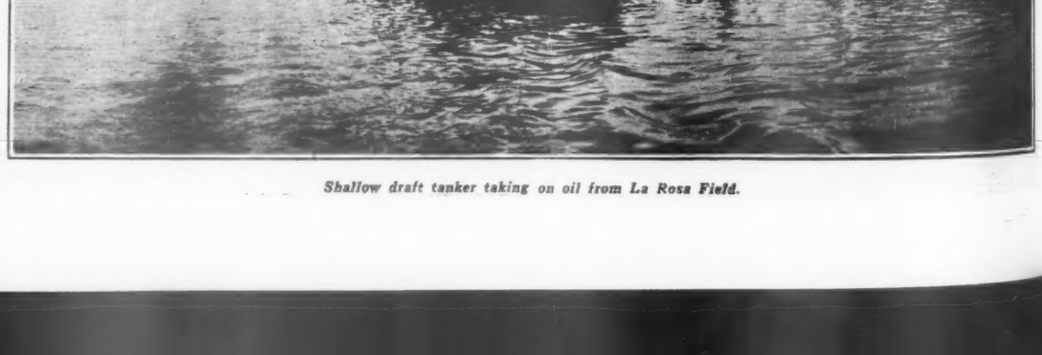
The outstanding geological fact at La Rosa is the extraordinary distance down the dip to which the oil extends. On most structures a few hundred feet down the dip from the axis of an anticline finds the sands saturated with water instead of oil. At La Rosa, however, production has been found in the same sand zone fully 1,500 feet deeper in the extreme western wells than in the extreme eastern ones. Moreover, these down dip wells show no falling off in initial production, and the eventual depth at which the western edge water will be reached is still unknown.

The La Rosa Field at the close of the year was producing about 55,000 bbls. daily, though many of the wells were shut in, and the production possible from all wells drilled would be substantially greater. All of this production is controlled by three companies, V. O. C., Lago, and the Gulf. The former owns the entire concession covering the District of Bolivar, extending for many miles north and south of La Rosa, and inland from the lake shore for about 25 miles. Lago and the Gulf obtain production from certain concessions covering a belt one kilometer wide extending from the shore out into the lake; the Lago also obtains production from its concession covering the entire lake beyond the kilometer wide strip along the shore.

At the close of the year these three companies were together operating about 15 strings of tools in the La Rosa, Ambrosio and Punta Benitez areas. Though this field could well be the center of competitive drilling on a large scale, it is being conservatively developed in accordance with curtailment agreements between the three companies.

Lagunillas Field

The Lagunillas Field, lying along the lake shore about 25 miles south of La Rosa, is at present the center of interest



Shallow draft tanker taking on oil from La Rosa Field.

in Venezuela. In this field the same three companies control the production, and in the same manner: V. O. C., on land, and Lago and Gulf off shore in the waters of the Lake. Developments in this field are going forward at about the same rate as at La Rosa, for here, also, agreements between the three companies are holding drilling in check. At present the field is producing about 100,000 bbls. of oil per day from 85 wells; and there are 15 wells drilling. The Lagunillas wells have been uniformly larger producers than either the wells at La Rosa or Mene Grande. The field was opened up in the latter part of 1926, so its newness makes it difficult to accurately estimate its future possibilities. However, from results so far obtained, it seems reasonable to expect an ultimate yield of 100,000 bbls. per acre from some of the territory already drilled up.

As at La Rosa developments are strung out along the north-south shore line, marking the boundary between V. O. C. on the land side and Lago and Gulf in the waters of the lake. At present the proved territory is only a thin belt a few hundred yards wide, but in the long dimension, it has attained the impressive length of 5½ miles, without encountering a dry hole at either extremity. The most southerly well was completed at a depth of some 4,000 feet with an initial production of 4,000 bbls. of clean oil. Toward the north end of the field production is running about 500 feet higher structurally and all indications point to a very considerable prolongation of the field in this direction.

As the occurrence of the oil is along a west dipping monocline corresponding closely to the condition at La Rosa, there is every reason to believe that the field will extend over an equally very large area.

May Join Both Fields

There is a possibility which now amounts almost to a probability, that Lagunillas and La Rosa will ultimately be joined together by a continuous belt of production along the 25-mile shore line which now separates them. Predictions of this obvious possibility have been made by the authors and others ever since the magnitude and mode of occurrence at Lagunillas were fully understood, and found to be similar to those at La Rosa. While the factors in the case seemed to point to this conclusion, it was contemplated with considerable trepidation, as this 25-mile strip if productive for only a mile in width could easily contain a billion barrels of oil provided the same concentration met with at its ends extended throughout the strip itself. However, the soundness of the prediction has recently been strongly supported by the bringing in of the San Matias well of the Lago Petroleum Corp. at a point on the shore about 7 miles north of Lagunillas, or 18 miles south of La Rosa. The depth to the top of the oil zone in this well is 2,662 feet, which is shallower than the depth of the Lagunillas Field, but this is in accord with the mentioned rise to the north so it seems certain the field has been extended at least the 7 miles to San Matias; and the prospects between this point and La Rosa have been correspondingly enhanced.

Mene Grande Field

The Mene Grande Field is the oldest field in Venezuela, having completed in 1927 its eleventh year of commercially productive life. This field, which is about 11 miles back from the lake, started oil shipments in 1917, and has produced to the end of 1927 a total of approximately 37,500,000 bbls. of oil, distributed according to years as shown in the table:

Mene Grande Production by Years

1917	225,783
1918	367,087
1919	251,947
1920	512,878
1921	1,414,591
1922	2,325,477
1923	3,539,363
1924	4,860,482
1925	6,362,149
1926	8,438,244
1927	*9,200,000
Total	37,498,001

*Estimated.

This field is operated by the Royal Dutch through its 100 per cent owned subsidiary, the Caribbean Petroleum Co. Between 3,000 and 4,000 acres have so far been proved, but the full extent of the productive territory is still far from final delimitation. Surrounded as it is by extensive acreage of the same company, it constitutes one of the most ideal operating propositions imaginable, and in fact is one of the notable oil fields of the world. The field is connected with the lake by a company-owned narrow gauge railway, and branches of this spread in a network throughout the field. As a part of the area is heavily timbered and marshy, the cost of the road construction throughout the field is held down by an extended use of this individual railway. Also, several well-graded auto roads have been constructed, and transportation

Standard Oil Co. of New Jersey's No. 1 Hombre Pintado, a wildcat west of El Mene Field, making a flow of 300 bbls., 27 gravity oil from 1,657 feet.

throughout the field is, in spite of the disadvantageous topography, excellent. In respect to this one feature, transportation, the advantages of one company control stands out in marked contrast to the conditions met with in fields such as Smackover, where similar topographic handicaps are met with.

Drilling in 1927

During 1927, some 35 wells were drilled in Mene Grande, ranging in depth from around 2,000 feet to 4,000 feet, and with initial production of from 200 bbls. to 5,000 bbls. The limits of the proved territory were not greatly extended during the year, as most of the wells were inside locations.

All told, there had been completed to the end of the year, about 140 wells. A few of the oldest ones have been definitely abandoned, and a larger number are temporarily off production through having sanded up. These latter, however, are merely waiting the need for increased production, when they can be cleaned out and produced or pumped as the case may be. At the close of the year, the field was making about 50,000 bbls. a day of 18½ degrees Baume oil, from some 50 wells. While the number of wells "off production" might indicate a comparatively short life for the wells, this is not the case, as at Mene Grande pumping has not been practiced to any extent, and consequently a well that goes off production after four or five years, has in reality had an exceptionally long life as a flowing well, and has excellent prospects for a much longer period of productivity when pumping becomes advisable. Some of the wells have made extraordinarily good flowing records, perhaps the best being well No. 5, which was completed in 1917, and during part of 1926, the tenth year of its life, was flowing 200 bbls. a day.

The best conception though, of the type of well encountered at Mene Grande is portrayed by the figure for average total production per well drilled to date. Dividing the 37,500,000 total production figures given above by 140, the total number of wells drilled, the resultant is 268,000, which represents the average output per well since the start of the field. To fully appreciate this figure, one should bear in mind that these 140 wells, or many of them, still have much of their productive life before them; some of the best producers are indeed only a few months old. With this fact in mind, and assuming no further drilling to be done in this field, it is more than probable that another 50,000 bbls. would be added to the average of the wells already drilled, and that accordingly the actual ultimate production for the first 140 wells drilled will run over 300,000 bbls. per well.

Gravities of the Oil

An idea of the value and properties of the crudes produced in the several Venezuelan fields is indicated to a certain extent by the gravities heretofore mentioned. The bulk of the oil, from Maracaibo Basin, nearly 95 per cent, may be referred to as heavy oil, that is, between 17 and 25 degrees gravity. These heavy oils come from Mene Grande, La Rosa, and Lagunillas Fields.

The so-called light oils range in gravity from 27 to 42 degrees, and are obtained from the fields of El Mene, Concepcion, and La Paz. In the following table is shown the summaries of distillation tests for a representative heavy oil from La Rosa, and a light oil from El Mene, as made by the United States Bureau of Mines*.

LA ROSA FIELD—CRUDE
A.P.I. Gravity, 25.2; Per Cent Sulphur, 1.69

	Pct.		Sp.Gr.	A.P.I.	Viscosity
Light gasoline	3.6		.700	70.6	
Total gasoline and naphtha	18.9		.749	57.4	
Kerosene distillate	3.4		.812	42.8	
Gas oil	15.5		.855	34.0	
Nonviscous lubricating distillate	9.4	.882	.917	28.9-22.8	50-100
Medium lubricating distillate	6.9	.917	.923	22.8-21.8	100-200
Viscous lubricating distillate	3.6	.923	.925	21.8-21.5	Above 200
Residuum	42.1		.988	11.7	
Distillation loss	.2				

EL MENE FIELD—CRUDE
A.P.I. Gravity, 35.2; Per Cent Sulphur, 0.38

	Pct.		Sp.Gr.	A.P.I.	Viscosity
Light gasoline	16.3		0.710	67.8	
Total gasoline and naphtha	47.4		.756	55.7	
Kerosene distillate					
Gas oil	21.8		.881	29.1	
Nonviscous lubricating distillate	6.6	.923	.946	21.8-18.1	50-100
Medium lubricating distillate	4.5	.946	.960	18.1-15.9	100-200
Viscous lubricating distillate	4.6	.960	.969	15.9-14.5	Above 200
Residuum	14.4		1.006		
Distillation loss	.7				

*Properties of Typical Crude Oils from the Producing Fields of Venezuela, by A. J. Karemer, Serial No. 2,807, May, 1927.

The El Mene light oil yields a large amount of gasoline by natural distillation. By straight topping, the cuts are about as follows:

Gasoline	37.4
Kerosene	30.0
Gas oil	28.0
Lubricating stock	2.5
Coke	2.1

Refining Yield

With respect to the heavy oils, from the high sulphur content and comparatively low gasoline yield as shown in the table, it would appear that this oil is roughly comparable to the high sulphur crudes of Southwest Texas. It is thought that the Venezuelan crudes should, however, be given a slightly higher rating as in actual refining practice it has been found that the oil is easily handled, causes no excessive corrosion, and is considered for refining purposes much superior to the Mexican crudes. As a general comparison the heavy Venezuelan crude may be considered the equal of the medium to better grades of the Gulf coastal oil. The gasoline obtained from the Venezuelan heavy crude has antiknock properties, and can be utilized for the production of lubricants.

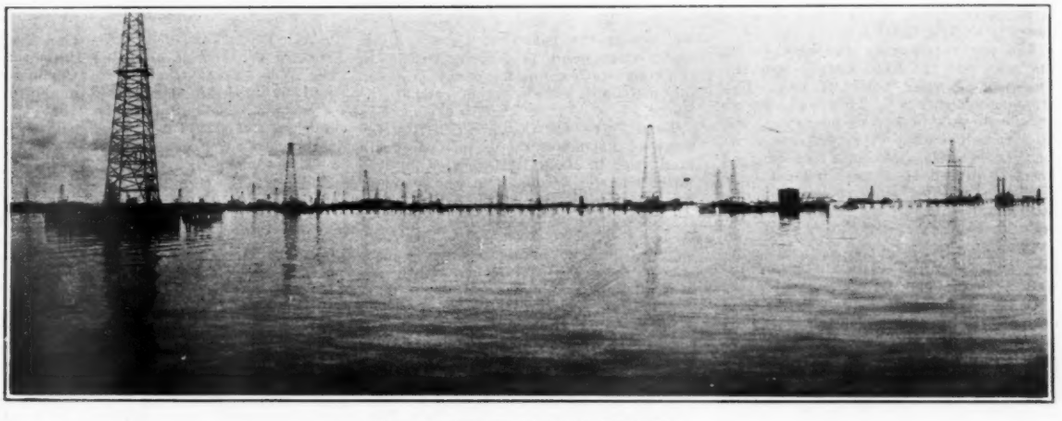
By straight topping the average cuts obtained from the heavy oils by one of the refineries are about as follows:

	%
Gasoline	10
Gas oil	5
Fuel oil	83
Refinery loss	2

Drop in Prices

There is no such thing as an open market or posted pipe line prices in connection with the production of Venezuelan crudes. There is, however, a market based on privately negotiated sales contracts, and in this way the "Big Three" disposes of a substantial quantity of crude to other interests. At the present time, a price of around $1 per barrel f.o.b. one of the three deep water terminals, about represents the market. There has been a drop in this crude price approximately parallel to that of bunker C. A few months ago when bunker C, f.o.b. New York sold for $1.65, such Venezuelan crude as was for sale, was bringing about $1.50 a barrel at deep water. Now, with bunker C at about $1.35, the Venezuelan crude brings about $1.

Wildcat drilling throughout the year has been, comparatively speaking, rather disappointing. In eastern Venezuela, some half dozen locations were tested,



View showing part of the La Rosa Field.

and except for small amounts of heavy oil met with in some cases, were in general uniformly unsatisfactory. Work in this region is, however, being continued, and it is thought that the geologic knowledge gained by these first unsuccessful tests may have yielded valuable information which will eventually lead to the discovery of commercial fields. Eastern Venezuela comprises an extensive area with numerous favorable geologic structures, and conditions, which have not yet been tested. It also contains one producing field near the Guanoco Asphalt Lake, where 1,800 bbls. or so of 10 degrees gravity oil is being produced. The wildcat wells already drilled have indicated the existence of other deposits of this type, but from what is known about the geology of the region, taken in connection with its proximity to prolific production in the fields of Trinidad, the writers are of the belief that important discoveries will eventually be made.

Wildcat Operations

In the state of Falcon (see map of northwestern Venezuela), there are three wildcat operations which give promise of resulting in the discovery of commercial pools. One located in the eastern extremity of this state is the locality known as Mene del Salto, where the North Venezuelan Petroleum Co. (Trinidad Leaseholds, and others), is working on their third and fourth wells. The first and second wells encountered 35 degrees gravity oil with an initial flow of around 200 bbls. per day each. It is understood that plans are under way for the construction of a narrow gauge railway to this field. And all indications point to the probability that a shipping field at this point will be opened up in due course of time.

Going westward across the state of Falcon towards the Maracaibo Basin proper, the Standard Oil of California-Beacon Sun joint operation near Urumaco holds forth considerable promise. The first well drilled at this locality encountered a heavy flow of gas, and a reported 500-bbl. show of good gravity oil at 3,400 feet. This well was lost, however, and the second well now drilling has been long delayed by fishing troubles without having reached its objective.

Both of these Falcon areas are close to seaboard and once production in commercial quantities is found, the oil can be readily piped to deep water terminals.

The third promising area in Falcon is in the locality known as Hombre Pintado, where the Standard Oil of New Jersey obtained a 200-bbl. well of good gravity oil at 1,600 feet. This well lines up with the strike of the formations in the El Mene Field, and has very probably proved the existence of another field similar to El Mene.

Within the Maracaibo Basin itself, a well 6 miles south of the Mene Grande Field went to 5,120 feet without finding more than small shows, and another well near the lake shore and directly west of the field, also failed to find anything down to 5,200 feet.

Dry Holes

Two wells in the district of Perija (west side of the lake), were abandoned as dry; and two more in the district of Miranda (east side of the lake) were dry down to around 4,000 feet.

The one outstanding discovery during the year was the Lago Corp.'s San Matias well, 7 miles north of Lagunillas, previously mentioned. This well, though an enormously important operation, was to a certain extent expected, due to its location between two fields; so much of the zest caused by a true wildcat is in this case missing, even though the economic importance of the result is exceedingly great.

The two other bright spots in the wildcat picture, are the west side of the lake wells—Amana and Palmarejo.

In the former well, drilled by the Gulf company on property controlled by the Atlantic Refining Co., an oil sand was struck at 3,300 feet, which gave a swabbing test of 30 bbls. of clean 30 degrees gravity oil over a period of several days. The showing, though hardly of commercial importance, is encouraging, and the well is being deepened in search of a more prolific pay.

The Palmarejo well being drilled by the Omnium Oil Development Co. (British Independent) passed through several promising oil showings between 2,600 and 3,000 feet. The final results that have been obtained in this well are not known as this is written, but according to reports at hand, the well will probably be abandoned, and work started on a new location in the same general area.

Central Venezuela

The large area generally referred to as Central Venezuela, which includes the States of Zamora and Apure, has not yet been tested by the drill. This region is separated from the northern and more populous parts of the country by a branch of the Andes, which cuts across Venezuela in a northeastward direction through the State of Tachira, Merida, Trujillo, and on further in the general direction of Caracas. The Orinoco and its tributaries drain the Central Venezuela area which in a large part is an open and almost treeless prairie. Because of the abundant forage it supports vast herds of cattle which, however, are of small value on account of transportation handicaps. In this great expanse of country, the general geologic conditions favorable to oil accumulations are known to be present. The same Tertiary and Cretaceous beds productive in the Maracaibo Basin are encountered in Central Venezuela, and seepages of both oil and gas are known to exist. At the present time the region is being carefully explored by several geological parties in the employ of one of the large oil companies; and with the accumulation of more detailed geologic data, the value of this region as a major potential source of oil is being established.

Refinery Operations

A review of Venezuelan activities is hardly complete without a word about the refineries, and deep sea loading terminals, which have come into being coincidentally with the production phase of development.

After the oil leaves the lake in the tankers of one of the three companies as previously explained, it follows one of three courses.

The Royal Dutch Lake tankers carry their cargo to the island of Curacao about 240 miles from Maracaibo. Curacao, a possession of Holland, is the largest of the several islands comprising the Dutch West Indies group. This island, rich in deed and legend of the Spanish Main, the pirate days, and the Rebellion of the Spanish colonies, has become in recent years, one of the highly strategic outposts of the world oil industry. The splendid deep land-locked harbor, close to Venezuela, and in the path of the Panama Canal shipping must have influenced the Royal Dutch company in the selection of this island for the site of one of the large refining operations of the world. The capacity of the Royal Dutch Curacao refinery is around 100,000 bbls. a day, and as the Venezuelan output increases it may be expected to attain even greater proportions. So great has become the congestion of shipping in the principal harbor, Wilhelmstadt, that the company has been forced to connect its plant by pipe line with another harbor across the island at Caracas Bay. This latter point is largely used as a refueling station for the many oil-burning merchant vessels which call at the island.

Lago Petroleum Corp., which first became an important factor in Venezuelan production in about 1924, located its deep water transfer terminal on the island of Aruba. This is also a Dutch possession, much smaller than Curacao, and about 80 miles closer to Maracaibo. The Lago plant at present merely includes a modern pier, pump equipment, office and dwellings for employes, and about 600,000 bbls. of steel storage, the function of this terminal being simply to discharge the shallow draft boats and reload into deep sea tankers. Much of the Lago oil goes to the refinery of the Pan American in Tampico, and other substantial consignments go to the New England oil refinery at Fall River, Mass.

The Gulf Oil Co., located its transfer station on the prominent Venezuelan coast line feature known as the Paraguana Peninsula. Las Piedras Cove, where this terminal is located, is only 120 miles from Maracaibo, making it the shortest of the shallow draft tanker hauls. At this point the Gulf has constructed a long pier, and the other requisite facilities including 640,000 bbls. of steel storage.

During the coming year one more terminal will be established on the Island of Aruba by the Mexican Eagle Oil Co., and it is generally understood that these facilities will be extended to include the construction of a topping plant. This company has for some time been importing Venezuelan crude into Mexico for their refinery at Tampico, but owing to the recent increase in Mexican import duties it seems logical to suppose that upon the completion of the facilities above mentioned no further shipments of Venezuelan crude will be made to Mexico.

The Lago Petroleum Co. is also known to be considering plans for a refinery to be located on the island of Aruba, or somewhere in Venezuela. At present Lago operates a small topping plant in the La Rosa Field, the product being sold locally in Venezuela. The British Controlled at El Mene also have a similar small refining installation. The most important plant now in operation in Venezuela itself is the Caribbean Petroleum Co. refinery at San Lorenzo, near Mene Grande. The capacity of this plant is about 5,000 bbls. of crude per day. Most of the gasoline marketed throughout Venezuela is supplied by the San Lorenzo refinery.

Opportunities Open

From the foregoing account, it will become evident that Venezuela has emerged from the uncertainties of the pioneering stage of its development, and has assumed an important place in the general scheme of world oil economy. The results attained foreshadow even greater developments, participation in which holds forth ample incentive to attract the attention of new capital.

The impression prevailing in some quarters that the Venezuelan oil picture is practically a closed book in the hands of the three dominant companies who have become so conspicuously successful, falls far short of reflecting the true situation. In the vast undeveloped reaches of the Republic, other as yet unknown equivalents of the Maracaibo Basin unquestionably await the coming of the wildcatter, who will bring them forth into the spotlight. Several important American companies other than the ones mentioned, have assembled extensive holdings which are now in the course of being tested, and much is to be expected from these activities. The petroleum law of the country which requires the return of half of the concession acreage first taken up for exploration, will also materially help to keep opportunity open, and will insure for several years to come the availibility of acreage for new groups aspiring to a position in the country.

WEST TEXAS OIL MEN WILL ATTEND HEARING

AUSTIN, Tex., Dec. 24.—The membership of the Oil and Gas Bureau of the West Texas Chamber of Commerce will be represented here January 18, when the constitutionality of the relinquishment act will be argued before the Supreme Court.

Those who will attend the hearing, include W. B. Hamilton, Wichita Falls, chairman; W. R. Keeble, Abilene; D. J. Arnett, Lubbock; Leon Shields, Coleman; W. H. Holmes, Amarillo; H. Obanon, San Angelo; Joe Weaver, Eastland; J. E. Thompson, Breckenridge; W. M. Massie, Fort Worth, and H. J. Adair, Wichita Falls, manager of the bureau.

Under the relinquishment act, landowners are allowed to retain fifteen-sixteenths of oil and gas rights, one-sixteenth going to the State for the permanent school fund, since the land originally was sold from the school tract. Heretofore the Attorney General's Department, declaring that the statute is unconstitutional, announced that it would seek to have the law declared invalid, opposing the attitude of the landowners, West Texas chamber and J. T. Robison, land commissioner.

Mr. Adair expects to have a conference with Attorney General Pollard and after completing his investigation will go to San Angelo to confer with oil interests and with J. W. Hill, counsel for Ira G. Yates, one of the landowners of the Pecos Field, who has been sued. These suits are mandamus proceedings against Robison, applicants seeking to compel the commissioner to issue permits to drill.

"Chairman Hamilton and members of the Oil and Gas Bureau feel certain that should this relinquishment act be declared unconstitutional that it will work great hardship all over West Texas," Mr. Adair said.

"We are coming here in force to support Commissioner Robison in the mandamus suits. We know that a large number of citizens in West Texas will be adversely affected if the law is knocked out and that it will have the same affect upon the oil business. Titles to oil and gas rights would have no value if the court holds the Legislature had no authority to allow landowners the fifteen-sixteenths."

West Texas oil development already has sustained a setback due to the litigation, according to Mr. Adair. The bureau of which he is manager will hold a meeting in San Angelo, January 25, at which conservation and remedial legislation will be discussed. The next day the West Texas Petroleum convention will be held.

CALIFORNIA MARKETS REPORTED WEAKENING

LOS ANGELES, Calif., Dec. 24.—A noticeable weakening in the California gasoline market developed during the past week. Prices eased off somewhat and gasoline for domestic use is now bringing 9 to 10 cents in tank cars. The unsatisfactory marketing conditions which have been characteristic of the Los Angeles area for a number of years have been gradually moving into other territories throughout the State.

Conditions in the bay district in and around San Francisco are at present worse than in southern California from the point of view of price cutting. Some service stations in this territory have large signs out advertising gasoline at as low as 18 cents per gallon, including tax. Cut-price gasoline in this territory is a comparatively new thing. There has been a small amount of it for some time but the gallonage taken by this class of trade is showing large increases and some marketers are worried lest the posted price of the Standard Oil Co. will be reduced as a result. Most marketers, however, do not believe the situation serious enough to warrant such a step and are still hopeful present service station prices will continue.

Natural gasoline is also somewhat weaker. Increased production from the deep sand at Signal Hill is beginning to make itself felt and prices are unsteady. While in most cases natural gasoline manufacturers can obtain a price of 8½ cents or better for their product, a few isolated spot sales have been made at as low as 8 cents and one is known to have been closed at a figure under that. No immediate improvement is seen for this market.

Export kerosene continues to move in good volume. So much so, that the price has strengthened fractionally. While sales were being made around 4¾ cents a week ago, high grade export kerosene is now bringing 5 cents. This market is in a fairly strong position.

Fuel oil appears to be weakening slightly, especially in the local market. Several of the smaller refiners are making spot sales at as low as 65 to 70 cents per barrel. This does not reflect the present market, but shows a weakness cropping out which may possibly become more unstable as time goes on.

The New Year sees these 2 rods *predominating*

1928

Now on full production ready for bigger 1928 demand ... Axelson A.P.I. Specification Rods and Axelson Standard Rods
AXELSON MACHINE CO.
P. O. Box 337, Los Angeles, Tulsa, St. Louis, New York City
Mid-Continent Distributors ... Frick-Reid Supply Co.
Eastern Distributors ... Frick & Lindsay Co.
THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY
Copyright 1920 Axelson Machine Company Los Angeles
AXELSON STANDARD
AXELSON A·P·I·

AXELSON SUCKER RODS

World Oil Outlook

By W. T. ANDERSON

The American oil industry is nearing a stage where it is going to be more immediately affected by developments abroad in production, refining and consumption.

We are in this country far from the "saturation point" in the use of the automobile, the chief consumer of our products, but half of this year's output of motor vehicles was used for replacements and 11 per cent was exported.

Motor registrations abroad are now close to 6,000,000, having almost doubled in three years. Foreign oil producing countries, or those controlling foreign production, are increasingly seeking to expand their refineries in view of this growing automotive demand but so far our exports of gasoline are holding their own.

The rest of the civilized world is now fully awake to the significance of gasoline power as demonstrated by the amazing strides of America, and is definitely embarked upon a like course.

European economists are comparing American expansion since the war to the industrial revolution that followed the introduction of the steam engine, and are attributing it to our utilization of petroleum in the internal combustion engine.

We are accustomed to date the present era from before the war but actually our present rate of industrial and commercial expansion dates from 1919.

Production per worker in our factories was no greater in 1919 than in the depressed year of 1914, according to the Department of Commerce. But the output per worker was 30 per cent greater in 1926 than in 1919.

It is significant that our consumption of gasoline began to take a much sharper upward trend in 1919 and that our motor registrations have more than doubled since.

The automobile, placed within the reach of practically everyone in the United States by mass production and cheap motor fuel, has become an institution in American life and business.

This fact compels us to consider that there must be some tremendous force sustaining the weight of the existing volume and the constantly increasing numbers of automobiles in this country.

The answer may be found in that gain of 30 per cent in output per worker since the war. The automobile is an economic tool or instrument that not only pays for itself but earns a healthy surplus for its possessor by increasing his efficiency in the commercial and industrial scheme.

A day laborer without physical means other than his hands is a far lower earning unit than he would be if he were supplied with pick and shovel. The introduction of machines has vastly enlarged the skilled trades and elevated general prosperity.

But the gasoline propelled motor vehicle not only supplies much to multiply productive efficiency during working hours but has a constructive value through recreating physically and mentally in leisure hours.

Not alone that but in addition to its immediate benefits to the user in widening his mobility, enlarging his earning power and bettering his standard of living the motor vehicle has built up great industries, immensely contributing to the increase in national wealth.

Besides the accessory and tire industries it has been the main factor in the development of the petroleum industry to its present proportions. Scores of other industries entering into the making of cars and material for them owe their prosperity to the motor car.

The billion dollars a year being expended on roads in this country would not have been possible or needed without the automobile. The army of men which distributes and services the motor car would have had to seek other employment.

As a nation we are enabled by the automobile to accomplish within a few hours what would formerly have taken weeks.

No other human agency has so speeded up a people as we have been accelerated by the automotive vehicle.

At first deemed a mere luxury it has proved the most paying of investments to the individual owner and to the whole country.

The great civilizations of ancient times were built on the labor of slaves. Machinery has emancipated modern mankind but no machine has been so productive in as many-sided ways as the gasoline motor car. It has put, not a carriage and pair, but a coach and a 20-horse team in everybody's garage.

Best of all, instead of being an extravagance, it is a demonstrated economy and as its use increases it promises ever wider benefits.

This is the great modern miracle of America which is gripping the imagination of the rest of the world. The countries where the people are most like ourselves are the first to follow our example. Canada, for most economic purposes a part of us, has one car for every 11 people; New Zealand one to every 12 and Australia one to every 17.

The United Kingdom, despite after-the-war difficulties, has one car to each 43 inhabitants; France one to each 46. The progressive Argentine republic has one to every 45.

When we see what the use of the gasoline car has accomplished for the United States, as an economic tool adding to the prosperity of the whole country, we are justified in assuming that it will also prove its value in such countries as these with comparative results.

The nations investing in motorization are going to draw a rich return. It will enlarge their productive capacity, create new industries, and increase well-being. The proof is shown in the progress of America.

Wise governments abroad will come to realize that the reduction of excessive taxes on motor vehicles, road improvement, and the lessening of burdens on the oil industry are needed to hasten the motorization of Europe.

They already realize the importance of a motor fuel supply but they have been thinking in terms of war needs rather than peaceful progress. Their greatest need for oil is to enable their people to take advantage of the aid to efficiency which has contributed so mightily to the marvelous advancement of America in the past nine years.

The refineries being built or planned abroad will be needed when that movement reaches its swing. Our own record shows that when a people becomes accustomed to the use of motor vehicles the demand grows more rapidly, because the new economic instrument is self-sustaining.

Increased productive capacity abroad, lessening cost and enlarging earning power, will, there, as here, widen markets and broaden prosperity.

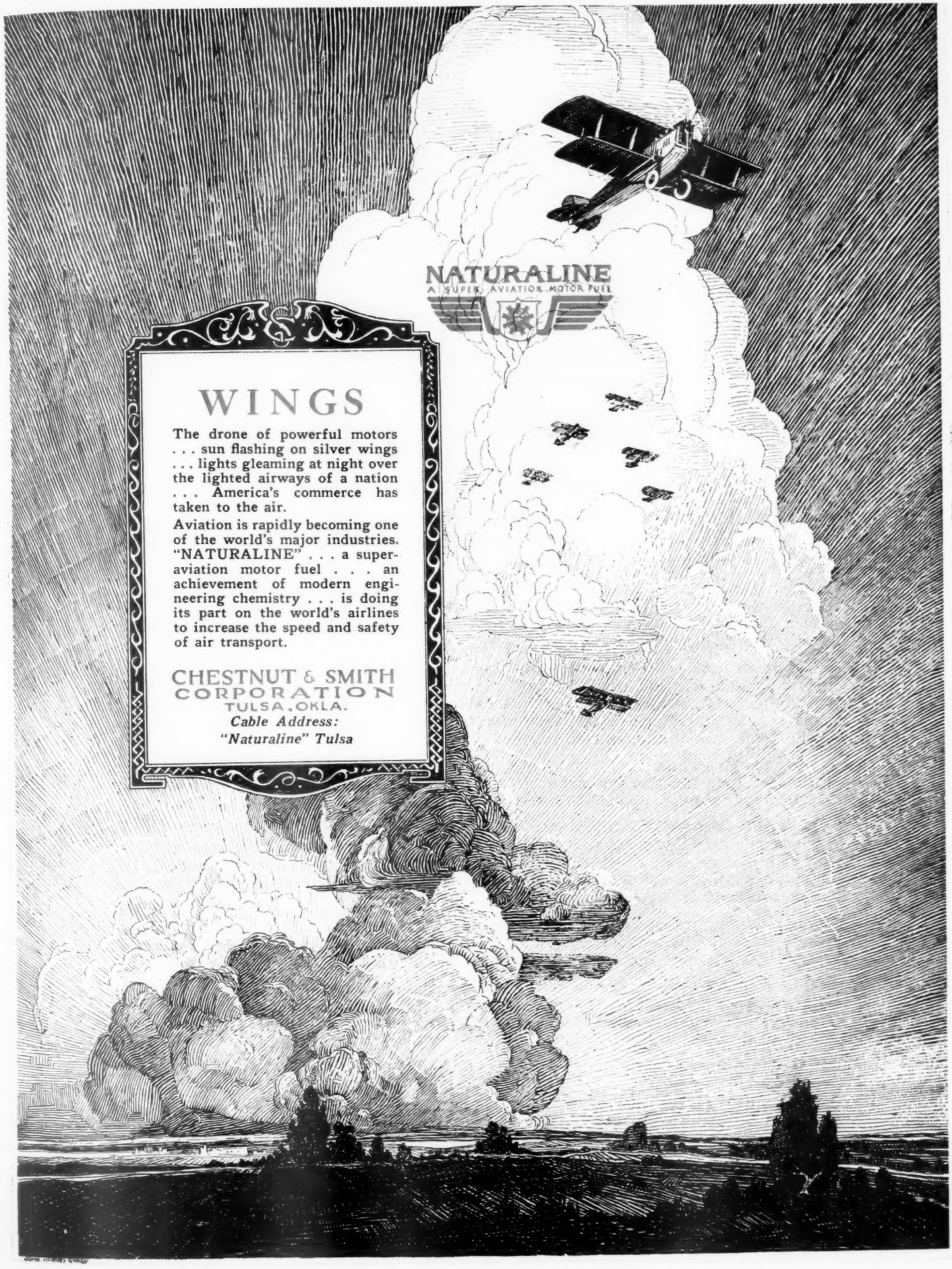
The Old World is as anxious to own a car as the New. It is starting out as we started out thinking a car was a mere pleasure vehicle. But it is finding the automobile a tool that pays for itself out of itself, bringing undreamed-of prosperity in its wake.

Vast stretches of the earth yet remain undeveloped. The motor car and the truck are going to hasten their exploitation. Think how much faster our own country would have been opened and settled had the "flivver" been ready to displace the "covered wagon." That is the advantage we have today. Who can guess what resources may be found in the waste places of the world?

The rest of the world has almost doubled its cars in three years. Within five years it may have 10,000,000 motor vehicles or as many as we had in 1921. If you doubt it consider the opinion of Charles E. Mitchell, president of the National City Bank, who predicted in an address at Detroit that "South America is a big prospective buyer. So are England, France and Italy. Sweden, Finland and Denmark were never in better condition. Belgium has recovered and is back at work." Denmark has one car to every 43 people, the same as England. Belgium one to every 80. This is but a beginning.

The demand for gasoline outside the United States and Canada has so far been largely, with the exception of trucks, in the nature of a luxury demand. What will it be when the motor vehicle becomes an essential in the leading countries abroad?

American leadership in production, refinery equipment, processes and efficiency in operation will assure us our share of that inevitable development.


NATURALINE
A SUPER AVIATION MOTOR FUEL
WINGS
The drone of powerful motors . . . sun flashing on silver wings . . . lights gleaming at night over the lighted airways of a nation . . . America's commerce has taken to the air.
Aviation is rapidly becoming one of the world's major industries. "NATURALINE" . . . a super-aviation motor fuel . . . an achievement of modern engineering chemistry . . . is doing its part on the world's airlines to increase the speed and safety of air transport.
CHESTNUT & SMITH CORPORATION
TULSA, OKLA.
Cable Address:
"Naturaline" Tulsa

NATURALINE

The Super-Aviation Motor Fuel

CONCENTRATED volatility . . . perfectly stabilized . . . the utmost in anti-knock qualities . . . "Naturaline" the outstanding fuel for the modern types of aviation motors.

Exhaustive tests, in the laboratories of the motor manufacturers, engineering schools, in flight tests by airplane manufacturers and pilots, on every type of ship and motor, have proven that this modern aviation fuel is one of the greatest forward steps ever made in the development of motor fuels.

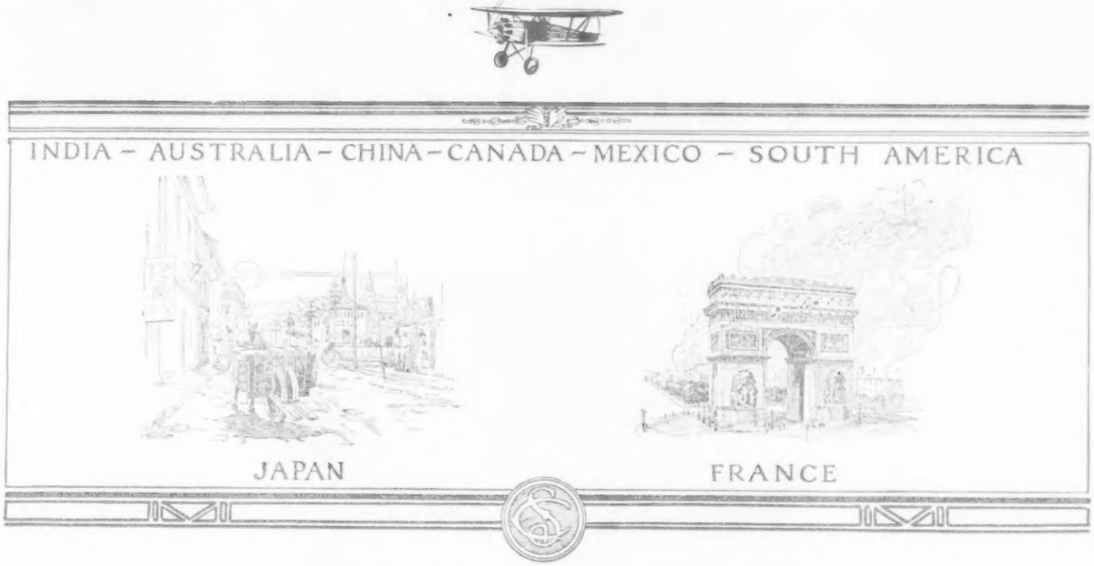
Comparative tests made with domestic aviation gasolines have clearly demonstrated its superiority in anti-knock, quick burning, instant acceleration and fuel economy qualities. "Naturaline" weighs 47 lbs. per hundred gallons less than U. S. Fighting grade aviation gasoline . . . it starts high compression motors more quickly at zero temperatures, minimizing crank case dilution in cold weather.

Made from natural gas, it contains all of the volatility so necessary to a perfectly combustible aviation fuel and its chemical purity eliminates carbon troubles, corrosion and cuts down motor overhaul cost to the minimum.

"Naturaline" has met an enthusiastic acceptance among the flyers of America and Europe. It has enabled the designers and engineers to work into the higher compression ratios with their motors. It is a fuel that has performed perfectly at high altitudes under practically all weather and atmospheric conditions without once showing a tendency to frost up the carburetor or "gas lock" the fuel lines.

Aviation is rapidly becoming a major industry in America. The demand of the pilots of modern ships and motors is for the best fuel obtainable. "Naturaline" fills that want and every user is a business builder for the "Naturaline" distributor.

"Naturaline" is a motor fuel that you can depend upon to deliver the highest possible motor efficiency under all flying conditions . . . in all the modern types of motors. It was created in the laboratory and developed on the flying field. It has met the demand for a better fuel than was available today.



NATURALINE

Export Grade

"Naturaline" . . . Export Grade . . . is one of the outstanding accomplishments of modern engineering chemistry.

This product, made from Natural Gas, is stabilized to a point where vapor losses in shipment and handling are lower than on the average 64-66 export refined gasoline.

It is concentrated volatility and all the undesirable "wild" gases have been eliminated through perfect fractionation. Under various tests it has shown a benzol anti-knock equivalent of from 44 to 48 per cent.

Due to the elimination of all propane, iso-butane and a large part of the normal butane it is possible to maintain a high gravity with a distillation recovery in excess of 96 per cent and, at the same time, a recovery of more than 84 per cent at 212 deg. Fahr.

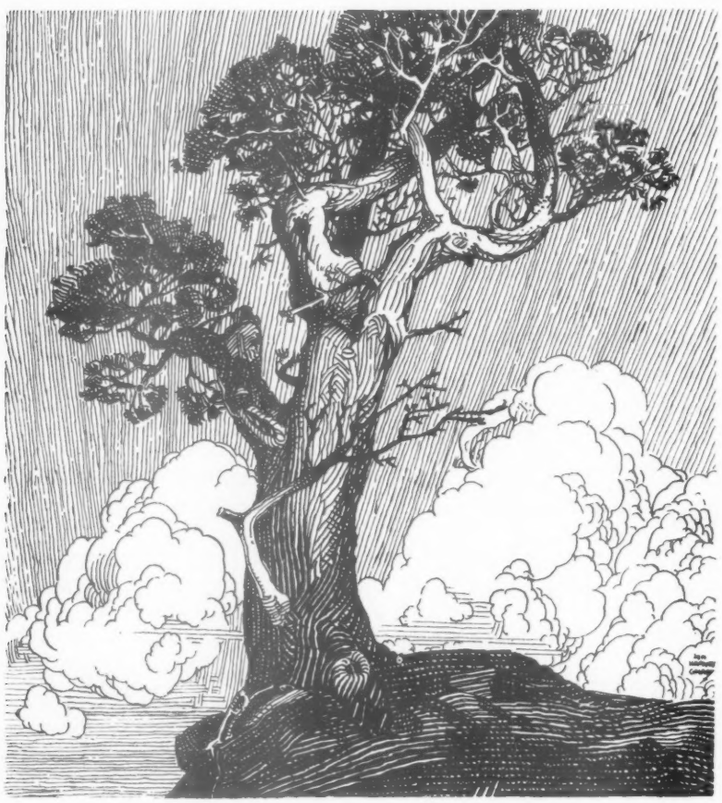
Used as a blending material "Naturaline" . . . Export Grade . . . will raise gravity and percentage at 212 deg. Fahr. as high as desired without, at the same time, making the gasoline so "wild" that it causes "vapor lock" or carburetor troubles.

Already "Naturaline" . . . Export Grade . . . is moving to foreign markets. It is winning popularity because of its unusual qualities as a blending material. We are in quantity production and are prepared to quote for prompt shipment anywhere.

"Naturaline" . . . Export Grade . . . is a product you should know more about.

NATURALINE
A SUPER AVIATION MOTOR FUEL

The LANDMARK



On the horizon of the Natural Gasoline Industry, Chestnut and Smith Corporation has helped to fix many of the landmarks. Prominent in its history — foremost in its activity, research, development, the trail has been blazed, markers set, progress charted, apace with the times — finally to meet first the new and sudden demand, "A better fuel for the aeroplane." NATURALINE was introduced and immediately accepted as *the world's super aviation motor fuel.*

NATURALINE
A SUPER AVIATION MOTOR FUEL

CHESTNUT & SMITH
CORPORATION
CHESTNUT & SMITH BUILDING
Tulsa Okla.

Cable Address: "Naturaline," Tulsa

Increased European Oil Consumption

Result of Increased Stability and Economic Progress Across the Atlantic. Growing Use of Petroleum Market

(Specially Contributed)

The increased economic progress and stability of Europe are reflected in the increased importation of oil products shown by the latest available trade statistics of our more important European oil export markets.

The increased use of the internal combustion engine in motor vehicles, ships and airplanes, the substitution of oil for coal in the boilers of the ships of the European navies and merchant marines, the increased use of petroleum residues as a fuel in certain specialized industries all contribute to this remarkable increase.

A world wide overproduction of oil with its attendant decreases in the values of oil products has gone hand in hand with widespread industrial activity in practically all branches of industry in Europe creating an unprecedented demand for the full catalog of oil products.

In countries for which statistics are given importations may be taken as an index of consumption since domestic production of crude oil is negligible in these countries. The periods of time covered are not identical for all countries given, which prohibit other than general comparison but all figures are the latest available from the Bureau of Foreign and Domestic Commerce at Washington.

German Petroleum Imports, January-June, 1927

Country—	Percentage Share	Metric Tons*
United States	54	417,235
Venezuela	14	106,923
Russia	9	73,972
Rumania	7	52,221
Persia	6	48,728
Dutch Indies	5	37,470
Other countries	5	40,038
	100	776,587

*Includes lubricants, light products, gas oil, crude gasoline, kerosene, heavy gasoline and crude oil, respectively, in that order of quantitative importance.

Considered otherwise, total imports, their value, and the share furnished by the United States were:

Product—	Total Metric Tons	Value Goldmarks	U.S.A. Metric Tons
Lubricants	197,162	34,678,000	101,815
Light products	165,650	34,052,000	87,944
Gas oil	131,804	10,661,000	83,186
Crude gasoline	119,491	26,805,000	72,724
Kerosene	80,840	10,409,000	57,952
Heavy gasoline	62,967	11,338,000	12,963
Crude oil	18,673	2,150,000	651
	776,587	130,093,000	417,235

Compared with the first six months of 1926, it is observed that the total of this year's imports so far, namely 776,587 tons, contrasts with 624,599 tons imports from January-June, 1926, thus showing an increase of 25 per cent.

Product—	Jan.-June, 1926 Metric Tons	Jan.-June, 1927 Metric Tons
Lubricants	125,850	197,162
Light products	193,599	165,650
Gas oil	68,670	131,804
Crude gasoline	84,339	119,491
Kerosene	75,277	80,840
Heavy gasoline	56,007	62,967
Crude oil	20,857	18,673
	624,599	776,587

British Imports of Crude and Refined Petroleum First Nine Months of 1927
(American gallons)

Product—	1925	1926	1927
Gasoline	385,628,179	497,917,691	513,458,556
Spirit other than gasoline	6,183,023	2,768,859	6,067,360
Kerosene	125,913,136	171,047,570	179,391,948
Lubricating oil	78,871,039	87,537,993	86,637,254
Gas oil	64,331,870	89,200,875	91,008,244
Fuel oil	317,268,750	321,866,360	389,114,556
Other sorts	171,130	271,684	183,961
Total	978,367,127	1,170,611,032	1,256,861,880
Crude:			
From Persia	308,432,963	360,174,683	449,047,226
From other countries	159,168,662	105,327,975	193,760,042
Total of crude	467,601,625	475,502,613	642,807,268
Grand total	1,445,968,752	1,646,113,645	1,899,669,148

British Petroleum Re-Exports for the First Nine Months of 1927
(American gallons)

Product—	1925	1926	1927
Gasoline	42,237,517	15,086,867	16,325,801
Spirit other than gasoline	17,689	36,153	29,155
Kerosene	11,205,703	4,205,703	8,646,881
Lubricating oil	1,457,538	2,224,079	1,508,606
Gas oil	1,927,319	190,638	725,066
Fuel oil	3,037,542	738,321	6,780,854
Other sorts	11,776	4,931	776
Total	65,895,084	32,072,577	34,017,139

Fuel Oil Shipped for Use of Steamers Engaged in Foreign Trade
(American gallons)

	1925	1926	1927
Month of September	27,358,776	16,899,301	22,559,726
Nine months period	227,878,163	219,420,640	232,247,274

British Exports of Petroleum First Nine Months of 1927
(American gallons)

Product—	1925	1926	1927
Gasoline	35,669,899	36,694,133	20,351,964
Spirit other than gasoline	43,687	59,191	25,582
Kerosene	18,590,068	23,589,646	19,037,667
Lubricating oil	7,160,163	6,953,886	8,524,410
Gas oil	1,323,610	2,681,845	4,811,912
Fuel oil	80,252,135	51,108,784	45,457,795
Other sorts	96,376	184,676	272,702
Total	143,135,938	121,272,161	98,482,032

The following are the figures of imports, exports and re-exports of paraffin wax for the month of September and for the nine-month period:

	(Cwts.) 1925	1926	1927
Imports—			
September	126,401	104,224	173,521
Nine months	867,433	935,643	1,060,658
Exports—			
September	26,754	13,965	26,418
Nine months	197,373	118,112	124,750
Re-exports—			
September	7,501	15,370	23,523
Nine months	57,179	89,394	114,121

Bunkering at British Ports

Changes in the current prices of oil fuel for bunkering at British ports have taken place during the month of September, Standard bunker per ton ex-wharf now being quoted at £2.15.0, and Diesel at £4.10.0, except at Leith, where Standard bunker by barge is £3.17.6 and Diesel £4.12.6.

German Imports

The following traces the curve of petroleum imports by Germany from January-June, 1927, in the order of importance of countries of supply:

	1927 quintals	1926 quintals	1925 quintals
Lubricating Mineral Oils—			
Belgium	978	984	1,313
France	123	3,736	3,427
Germany	2,963	3,637	2,595
Great Britain	400	1,201	718
Lettonia	236	387	.....
Poland	2,933	9,116	115
Rumania	19,821	4,372	556
Russia	15,791	10,895	2,713
United States	155,221	130,641	121,419
Other countries	1,948	960	5,655
Total	200,414	165,929	138,511

Italian Imports

Imports into Italy for the first quarter of 1927 of lubricating oils, petroleum, gasoline, other mineral oils, and the residuum from distillation of mineral oils were as follows:

	1927 quintals	1926 quintals	1925 quintals
Petroleum—			
Rumania	111,826	51,415	2,268
Russia	65,224	53,678	36,898
Persia	20,206	15,726	10,965
Egypt	.....	16,667	9,761
United States	138,281	185,496	211,232
Other countries	14,134	1,770	26,549
Total	349,671	324,752	297,673
Gasoline—			
Rumania	21,674	608	2,375
Russia	70,407	45,586	29,120
British India and Ceylon	708	808	627
Persia	143,218	143,235	78,559
Egypt	.....	.....	36,590
United States	248,035	248,727	229,860
Other countries	931	1,441	325
Total	484,973	440,405	377,456
Mineral Oils, Others—			
Belgium	.....	2	.....
Germany	25	15	24
Great Britain	3	2	40
Netherlands	.....	1,998	2,232
Rumania	3,175	.....	.....
Russia	2	293	205
Switzerland	.....	.....	.....
Persia	.....	.....	32
United States	4,291	14	.....
Other countries	3	110	6
Total	7,499	2,434	2,539
Residuum from Distillation of mineral oil—			
Great Britain	8,200	434	.....
Rumania	290,351	61,567	.....
Russia	220,674	386,905	69,707
Georgia	157,271	31,198	365,089
Persia	115,017	8,239	143
British Antilles	43,324	5,113	39,482
Dutch Antilles	305,427	144,776	160,575
Mexico	3,936	6,866	140,142
United States	20,961	222,505	225,562
Other countries	1,524	154	2,292
Total	1,166,685	867,757	1,002,992

Spanish Imports

The National Fuel Council of Spain released on the last of October advance figures on the importation of petroleum products during the first half of 1927. For purposes of comparison the figures for the corresponding period of 1926 are also given:

	Jan.-June, 1927 Tons	Jan.-June, 1926 Tons
Gasoline	99,529	68,740
Kerosene	8,404	7,414
Motor oil	12,125	8,057
Others	16,504	20,373

The principal ports of entry for gasolines in order were Seville, Barcelona, Santander and Valencia; those for kerosene, Seville, Barcelona and Santander; those for motor oils, Valencia, Baleares and Seville; those for lubricants and other products were practically confined to Barcelona, with a limited importation at Bilbao.

Netherlands Imports

Netherlands Imports of Oil July, August and September of 1926 and 1927

	1926	1927	Of which the U. S. supplied in 1927
	Metric Tons		
Refined petroleum— (Kerosene)			
July	12,682	9,758	8,534
August	13,534	15,753	14,713
September	14,695	15,240	13,877
Total	40,911	40,751	37,124
Fuel oil—			
July	4,945	11,890	1,186
August	9,819	13,948	849
September	11,888	14,613	1,571
Total	26,652	45,451	3,606
Benzine—			
July	12,016	20,502	18,634
August	7,054	18,342	17,019
September	12,442	11,089	9,542
Total	31,512	49,933	45,195
Gas oil—			
July	6,503	5,810	2,260
August	16,191	7,483	6,297
September	4,892	11,113	5,933
Total	27,586	24,406	14,490

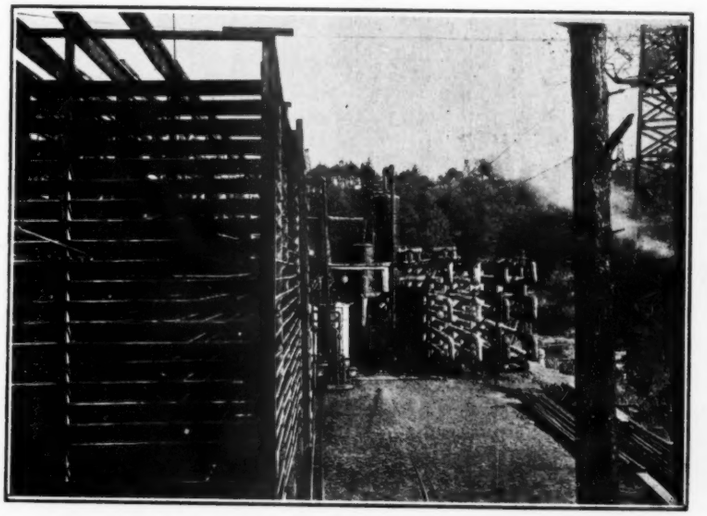
TEREDOS TOPPLE DERRICK

Just as the dinner hour whistle was blowing at 11 a. m. on Wednesday, October 4 (says a mail dispatch) the derrick of Superior 39, a Gulf Oil well in Maracaibo Lake, fell over in the water. The crew had just left for their meal. The piles on which the derrick was built had been eaten by teredos, a destructive marine boring creature. The derrick took the Christmas tree with it, and the well, which was pinched in to 400 bbls. daily, ran wild, but was closed in within two hours. The piling at other wells is being inspected by divers.

FRENCH PETROLEUM IMPORTS

Article—	Total Imports—1st 7 months 1927	Total Imports—1st 7 months 1926	Imports from U. S. A.—1st 7 months 1927	Imports from U. S. A.—1st 7 months 1926
Crude oil	838	10,735	(Not given)	(Not given)
Kerosene	113,715	137,209	82,344	111,588
Gasoline	683,873	696,249	456,566	522,028
Heavy oils	116,760	200,900	89,562	156,093
Petroleum residues	281,381	217,868	66,667	93,815
Various others	23,385	17,716	(Not given)	(Not given)
Total	1,219,952	1,280,677	.....	.....

GASOLINE PLANT IN JAPAN



Japan Oil Co.'s plant in Nishigama oil field, Niigata prefecture.

Study Alternative Motor Fuels Abroad

Many Nations Are Now Busily Engaged in Research Looking to Development of Substitutes for Gasoline

(Specially Contributed)

Gasoline substitutes and augmenting material devised to partially supplement, or entirely displace, petroleum gasoline are in widespread use throughout the world today. Wartime shortages with the abnormal postwar high prices of gasoline stimulated fuel research activities at that time to an extent persistently maintained during the past several years of declining gasoline prices.

Alcohols from the fermentation of vegetable matter, shale oils, the carbonization and also the hydrogenation of coal and lignite, and the direct synthesis of alcohols and hydrocarbons from combustible gases are all being tried.

The commercial large scale production of oil from shale has practically stopped in England and labors under serious difficulties in Estonia, the only two countries of the world with quantity production of these oils. Germany is focusing all her attention on the carbonization and hydrogenation of coal and lignite as outlined in our present article of "Oil from Coal." French achievements have been most successful in the field of direct synthesis of alcohols. Few, if any, may be said to have made a success of alcohol fuels from the fermentation of vegetable matter.

What French Are Doing

A survey of French experience and resources in fuels suitable for use as substitutes for gasoline is typical of the results achieved by other European countries. Among the substitute fuels are noted the following:

Gaseous fuels: Town gas, methane, acetylene, producer gas (air blast, steam jet, mixed).

Liquid fuels: (a) Natural, ethyl alcohol, methyl alcohol, cosmoline, benzol (from coal), white spirit (from lignite, peat and schist). (b) Synthetic, ethyl alcohol, methyl alcohol, artificial petroleum obtained by hydrogenation (from oils by the Mailhe process; from coal by the Bergius process; from naphthaline-tetraline), artificial petroleums obtained by starting from CO + H (synthol); CH_4 (Audry-Bourgeois process; C_2H_2 (Damiens process); C_2H_2 (Sabatier process); $C_6H_{10}O_5$ (Ketol); gases of distillation (Houdry-Prudhomme process).

How Fuels Are Fed

Gaseous fuels are fed to an engine in three different ways: First, from reservoirs where it is stored at atmospheric pressure; second, from cylinders where it is stored under pressure; third, from plant for producing producer gas or nascent acetylene carried on the car. Gas at atmospheric pressure was tested several years ago in France and in England on trucks in filling a vast rubber bag carried on the roof of the vehicle with combustible gas. The engine is connected to the bag by a pipe and inhales the gas until the supply of the latter is exhausted. The gas employed in these tests was ordinary town gas giving 5,000 calories per cubic meter. The explosive mixture, composed of gas and air, was formed in a mixer before being inhaled by the engine. This process was not a success.

Gases under 200 atmospheres pressure, in metal cylinders, are now being experimented with by the Paris Motor Omnibus Co. Methane, providing 10,000 calories per cubic meter, seems to enjoy a number of advantages for fuel purposes over town gas. Two automobiles entered in the recent French National Fuels Competition utilized nascent acetylene and both successfully covered the

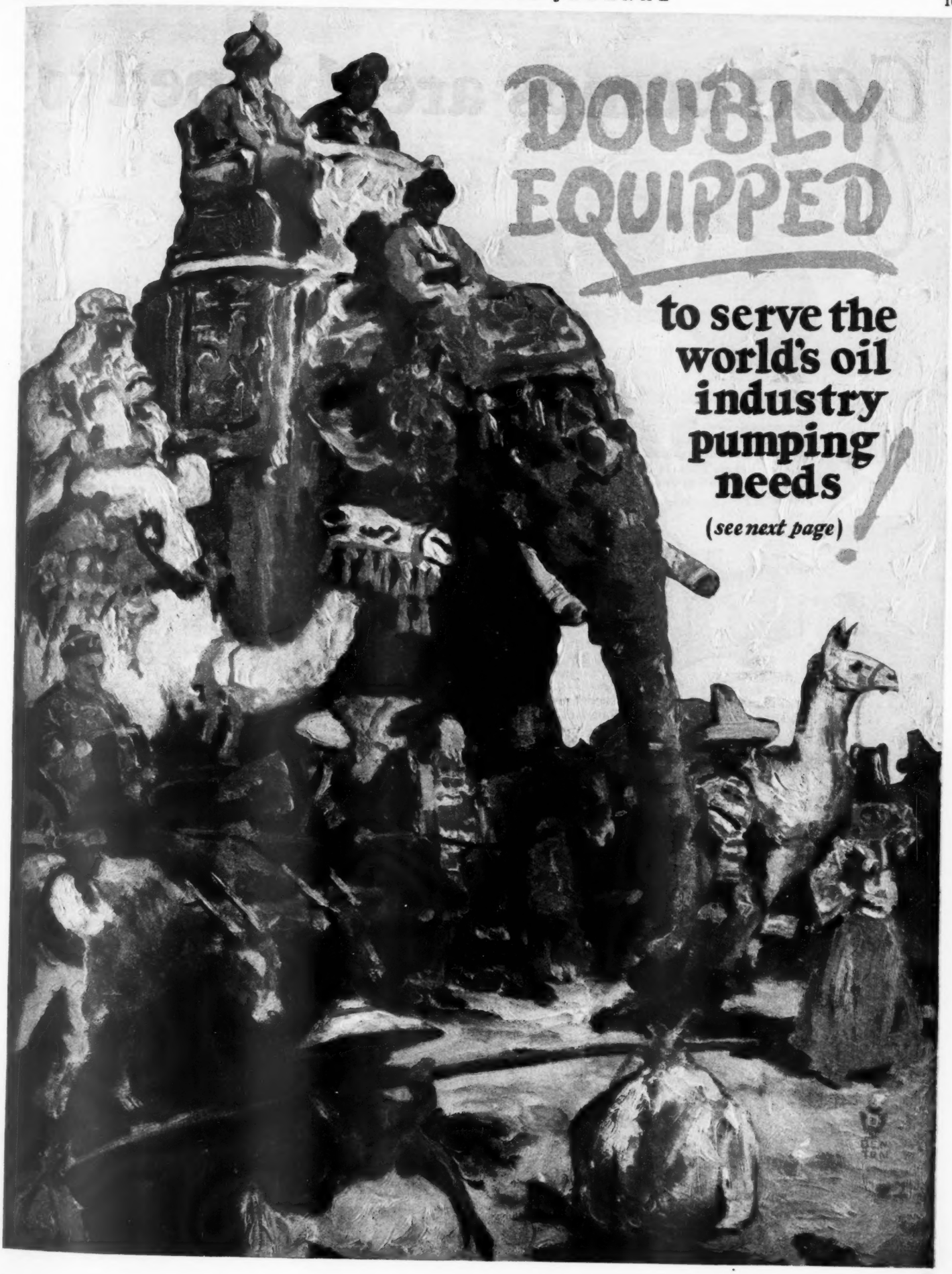
(Continued on Page 184)

WORLD'S PRODUCTION OF CRUDE PETROLEUM, 1857-1927, BY YEARS AND COUNTRIES, FROM U. S. GEOLOGICAL SURVEY

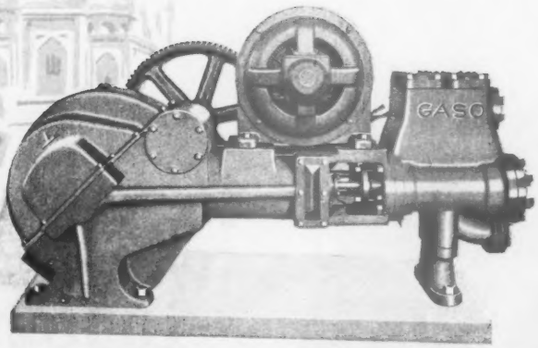
(Thousands of barrels of 42 U. S. gallons.)

Year	Rumania	United States	Italy	Canada	Russia	Poland (Galicia.	Japan and Formosa	Germany	India	Dutch East Indies	Peru	Mexico	Argentina	Trinidad	Egypt	Persia	Sarawak (Bt. Borneo)	Venezuela	France	Czecho-Slovakia	Colombia	Other Countries	Total for Year	Total Since 1857
1857	2	.....	....	....	.....	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	2	2
1858	4	.....	....	....	.....	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	4	6
1859	4	2	....	....	.....	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	6	12
1860	9	500	*....	....	.....	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	509	521
1861	17	2,114	*....	....	.....	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	2,131	2,653
1862	23	3,057	*....	12	.....	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	3,092	5,744
1863	28	2,611	*....	83	41	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	2,763	8,507
1864	33	2,115	*....	90	65	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	2,304	10,811
1865	39	2,498	2	110	67	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	2,716	13,527
1866	42	3,598	1	175	83	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	3,899	17,426
1867	51	3,347	1	190	120	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	3,709	21,135
1868	56	3,646	*....	200	88	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	3,990	25,125
1869	59	4,215	*....	220	202	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	4,696	29,821
1870	84	5,261	*....	250	204	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	5,799	35,620
1871	90	5,205	*....	270	165	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	5,730	41,350
1872	91	6,293	*....	308	185	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	6,877	48,227
1873	104	9,894	*....	365	475	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	10,838	59,065
1874	103	10,927	1	169	583	150	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	11,932	70,998
1875	108	8,788	1	220	697	158	5	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	9,977	80,975
1876	111	9,133	3	312	1,321	164	7	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	11,061	92,036
1877	108	13,350	3	312	1,801	170	10	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	15,754	107,786
1878	109	16,397	4	312	2,401	176	18	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	18,417	126,197
1879	110	19,914	3	575	2,761	215	23	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	23,601	149,798
1880	115	26,286	2	350	3,001	229	26	9	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	30,018	179,816
1881	122	27,661	1	275	3,601	287	17	29	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	31,993	211,809
1882	136	30,350	2	275	4,538	330	16	58	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	35,704	247,513
1883	139	23,460	2	250	6,002	365	20	27	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	30,255	277,768
1884	211	24,218	3	250	10,805	408	28	46	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	35,969	313,737
1885	193	21,859	2	250	13,925	465	30	41	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	36,765	350,502
1886	168	28,065	2	584	18,006	306	38	74	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	47,243	397,745
1887	182	28,283	1	526	18,368	344	29	74	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	47,807	445,552
1888	219	27,612	1	695	23,049	467	37	85	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	52,165	497,717
1889	298	35,164	1	705	24,609	515	53	68	94	....	....	.....	....	....	....	....	....	....	....	....	....	....	61,507	559,224
1890	383	45,824	3	795	28,691	659	52	108	118	....	....	.....	....	....	....	....	....	....	....	....	....	....	76,633	635,857
1891	488	54,293	8	755	34,573	631	53	109	190	....	....	.....	....	....	....	....	....	....	....	....	....	....	91,100	726,957
1892	593	50,515	18	780	35,775	646	69	101	242	....	....	.....	....	....	....	....	....	....	....	....	....	....	88,739	815,696
1893	535	48,431	19	798	40,457	693	106	100	299	600	....	.....	....	....	....	....	....	....	....	....	....	....	92,038	907,734
1894	508	49,344	21	829	36,375	949	173	123	327	688	....	.....	....	....	....	....	....	....	....	....	....	....	89,337	997,071
1895	576	52,892	26	726	46,140	1,463	170	121	372	1,216	....	.....	....	....	....	....	....	....	....	....	....	....	103,692	1,100,763
1896	543	60,960	18	727	47,221	2,444	237	145	430	1,427	47	.....	....	....	....	....	....	....	....	....	....	....	114,199	1,214,962
1897	571	60,476	14	710	54,399	2,226	262	166	546	2,552	71	.....	....	....	....	....	....	....	....	....	....	....	121,993	1,336,955
1898	776	55,364	15	758	61,610	2,376	319	184	542	2,964	71	.....	....	....	....	....	....	....	....	....	....	....	124,979	1,461,934
1899	1,426	57,071	16	808	65,955	2,314	539	192	941	1,796	89	.....	....	....	....	....	....	....	....	....	....	....	131,147	1,593,081
1900	1,629	63,621	12	913	76,780	2,347	871	358	1,079	2,253	274	.....	....	....	....	....	....	....	....	....	....	....	149,137	1,742,218
1901	1,678	69,389	16	757	85,168	3,251	1,117	314	1,431	4,014	275	10	....	....	....	....	....	....	....	....	....	†20	167,440	1,909,658
1902	2,060	88,767	19	531	80,540	4,142	996	354	1,617	2,430	287	40	....	....	....	....	....	....	....	....	....	†26	181,809	2,091,467
1903	2,763	100,461	18	487	75,591	5,235	1,209	446	2,510	5,770	278	75	....	....	....	....	....	....	....	....	....	†36	194,879	2,286,346
1904	3,599	117,081	26	553	78,537	5,947	1,219	637	3,385	6,508	290	126	....	....	....	....	....	....	....	....	....	†40	217,948	2,504,294
1905	4,421	134,717	44	634	54,960	5,766	1,347	561	4,137	7,850	373	251	....	....	....	....	....	....	....	....	....	†30	215,091	2,719,385
1906	6,378	126,494	54	569	58,897	5,468	1,564	579	4,016	8,181	531	502	....	....	....	....	....	....	....	....	....	†30	213,263	2,932,648
1907	8,118	166,096	60	789	61,851	8,456	1,718	757	4,344	9,983	751	1,005	*....	....	....	....	....	....	....	....	....	†30	263,957	3,196,605
1908	8,252	178,527	51	528	62,187	12,612	1,871	1,009	5,047	10,283	945	3,933	12	*....	....	....	....	....	....	....	....	†30	285,287	3,481,892
1909	9,327	183,171	42	421	65,970	14,933	1,887	1,019	6,677	11,042	1,411	2,714	18	57	....	....	....	....	....	....	....	†20	298,709	3,780,601
1910	9,724	209,557	51	316	70,337	12,673	1,829	1,032	6,138	11,031	1,258	3,634	20	143	....	....	....	....	....	....	....	†20	327,763	4,108,364
1911	11,108	220,449	75	291	66,184	10,519	1,737	1,017	6,461	12,173	1,465	12,553	13	285	21	....	....	....	....	....	....	†20	344,361	4,452,725
1912	12,976	232,935	54	243	68,019	8,535	1,659	1,031	7,117	10,846	1,752	16,558	47	437	214	....	....	....	....	....	....	†20	352,443	4,805,168
1913	13,555	248,446	47	228	62,834	7,818	1,940	857	7,930	11,172	2,071	25,696	131	504	98	1,857	141	....	....	....	....	†20	385,345	5,190,513
1914	12,827	265,763	40	215	67,020	6,436	2,636	781	7,410	11,422	1,837	26,236	276	644	753	2,910	318	....	....	....	....	†21	407,544	5,598,057
1915	12,030	281,104	44	215	68,548	5,352	2,928	703	8,202	11,920	2,579	32,911	516	750	212	3,616	392	....	....	....	....	†14	432,036	6,030,093
1916	8,945	300,767	51	198	65,817	6,587	2,963	656	8,491	12,547	2,593	40,546	797	929	404	4,477	629	....	....	....	....	†33	457,430	6,487,523
1917	3,721	335,316	41	214	63,072	6,228	2,861	642	8,079	13,180	2,577	55,293	1,145	1,602	943	7,147	542	120	....	....	....	28	502,751	6,990,274
1918	8,730	355,928	36	306	27,168	6,032	2,441	270	8,188	12,778	2,527	63,828	1,243	2,082	1,935	8,623	504	333	§633	....	....	†7	503,320	7,493,594
1919	6,618	378,367	35	241	31,752	6,096	2,238	265	8,736	15,508	2,628	87,073	1,332	1,841	1,517	10,139	596	425	334	48	....	†5	555,796	8,049,390
1920	7,435	442,929	35	196	35,430	6,697	2,221	246	8,375	17,529	2,817	163,540	1,657	2,083	1,042	12,230	1,020	457	356	69	...	†4	695,281	8,744,671
1921	8,368	472,183	32	188	28,968	5,167	2,233	274	8,734	16,958	3,699	193,398	2,061	2,354	1,254	16,673	1,411	1,433	389	94	...	†56	765,928	9,510,599
1922	9,843	557,531	31	179	35,692	5,227	2,055	319	8,529	16,720	5,314	182,278	3,018	2,445	1,188	22,247	2,849	2,201	496	120	323	†110	858,715	10,369,314
1923	10,867	732,407	34	170	39,156	5,373	1,789	312	8,320	19,868	5,699	149,585	3,400	3,051	1,054	28,793	3,940	4,059	403	74	424	122	1,018,900	11,388,463
1924	13,302	713,940	45	154	45,312	5,657	1,959	406	8,150	20,473	7,812	139,497	4,669	4,057	1,122	32,373	4,163	8,754	426	75	445	125	1,012,927	12,401,389
1925	16,646	763,743	45	318	52,448	5,960	2,000	411	8,000	21,432	9,164	115,516	5,818	4,554	1,226	35,038	4,257	19,687	459	158	581	125	1,067,566	13,468,955
1926	23,292	770,874	x	365	62,941	5,844	1,557	653	8,270	20,847	10,782	90,421	7,947	5,278	1,181	35,842	4,942	37,381	478	150	6,444	475	1,095,934	14,564,889
1927†	28,000	905,947	x	500	70,000	5,900	1,700	700	8,000	20,000	11,000	63,000	8,000	5,400	1,150	36,000	5,000	60,000	500	150	14,000	500	1,245,447	15,810,336
Total ...	315,780	10,345,493	x	26,747	2,238,524	208,337	54,997	18,503	181,552	356,269	83,267	1,470,217	42,186	38,596	15,315	257,499	30,704	134,992	4,204	938	22,217	1,971		

*Less than 1 thousand. †Estimated. §Production in previous years credited to Germany. x Included in "other countries."

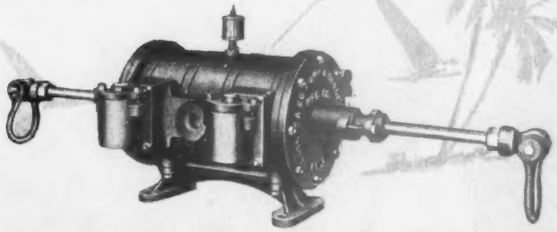

DOUBLY EQUIPPED
to serve the world's oil industry pumping needs!
(see next page)

Gaso pumps are shipped to



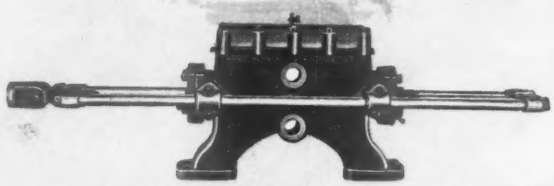
The newest Gaso Pump—fully enclosed, oil-tight, dust-proof and *self-lubricating*. Designed for pumping oil or water at pressures up to 1400 lbs. Pinion shaft bearings are TIMKEN TAPERED ROLLER BEARINGS. We invite you to ask for full details on this pump.

Gaso No. 604 is a Walking Beam Pump used to take gas from pumping wells or to put vacuum on wells. Connects to the walking beam either with wood or pipe pittman.



Gaso No. 604½ is a horizontal model of No. 604. Made to withstand abuse; cylinders of very best gray iron castings, accurately bored.

Gaso No. 201 is a rodline pump for general service. Used either in connection with the rod or shackle line between the power and well or else connected to the power direct with pittman.



Gaso No. 301 is a Jerker Power Pump used by nearly all American pipe line companies. Constructed to withstand the high pressures of main lines, yet equally suited to lease and low-pressure work.

GASO
for every oil

every section of the Globe

—here are 2 reasons why

In addition to its growing domestic business, the Gaso Pump & Burner Mfg. Co. has been favored with an ever-increasing volume of export business. In consequence, Gaso Pumps may now be found in Mexico, Venezuela, Colombia, Argentine, Spain, Roumania, Russia, India, Egypt and the British West Indies.

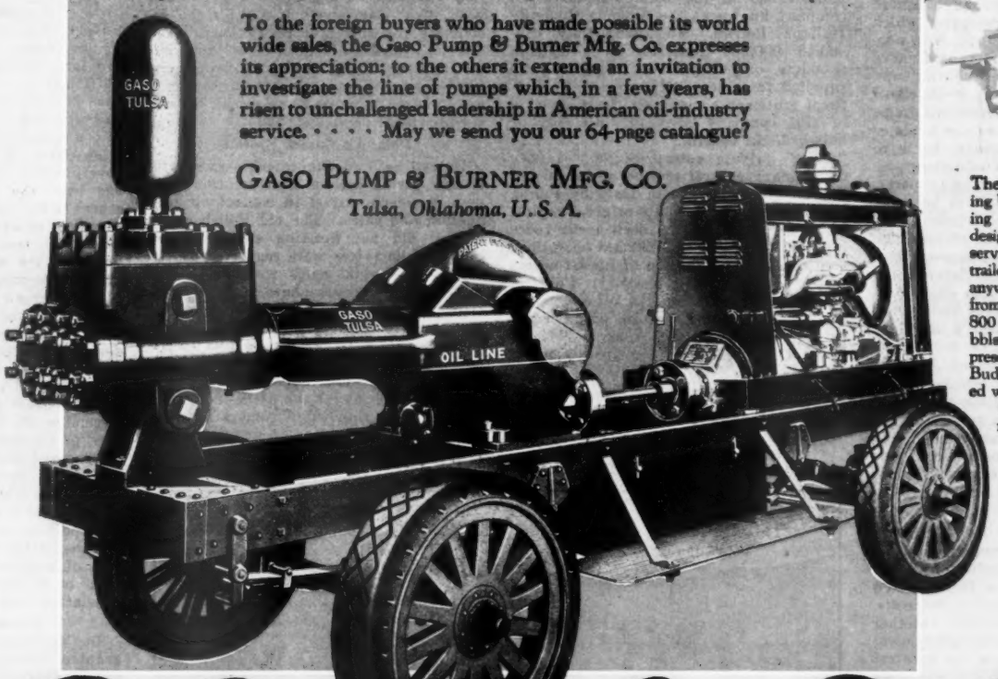
This growth in foreign sales is attributable mainly to two factors—

1—Gaso Pumps are not only designed on the principle of *fewer* parts but each part is purposely made much *stronger* than would ordinarily be required. Thus there is a double protection against trouble—a protection that has resulted in truly amazing performance. Uninterrupted operation is important enough in domestic service. It is essential in foreign service.

2—Through long experience Gaso has become trained in the handling of foreign shipments. Pumps are packed strongly enough to insure safe delivery at destination. Shipping details are handled by men trained in export work.

To the foreign buyers who have made possible its world wide sales, the Gaso Pump & Burner Mfg. Co. expresses its appreciation; to the others it extends an invitation to investigate the line of pumps which, in a few years, has risen to unchallenged leadership in American oil-industry service. • • • • May we send you our 64-page catalogue?

GASO PUMP & BURNER MFG. CO.
Tulsa, Oklahoma, U. S. A.



The Gaso Portable Pumping Unit is a self-lubricating worm-driven pump designed for emergency service. Mounted on a trailer, it may be hurried anywhere. Capacities range from 63 bbls. per hour at 800 lbs. pressure to 250 bbls. per hour at 275 lbs pressure. 40 to 50 H. P. Buda power unit. Furnished with or without trailer.

Full details gladly furnished on request.

PUMPS industry need

Trend to Legislative Control of Oil

Nationalization of Production and Movement for Monopoly in Distribution Marked Features in Foreign Lands

(Specially Contributed)

The past few years have been marked by a progressively increasing world tendency to control and regulate the petroleum industry by legislative action. The two most common forms of such legislation are those establishing monopolies for the sale and distribution of all oil products, referred to briefly as "monopolies," and that form of legislation nationalizing petroleum production usually referred to simply as "nationalization." In a number of cases the two merge so that it is impossible to distinguish the one from the other. In the British and Dutch possessions conditions similar to nationalization and monopolistic control exist by reason of general national policy rather than specific act. A brief and far from exhaustive summary of these is given in the following paragraphs.

Spanish Control

Spain has been the latest country to attempt a governmental controlled oil industry by its royal decree of June 28. On October 20, 1927, this exclusive monopoly for the importation, storage, distribution and sale of all oil products in Spain was granted to a banking consortium made up of 37 of the most important banks in Spain. All oil properties in Spain of British, American and other nationals are to be expropiated and the owners reimbursed in a very hazy manner to say the least. Not content with such a procedure a royal decree published on October 20 gives the director general of the stamp tax full powers to take any action necessary to assure an adequate supply of oil until the company which has been awarded the monopoly is in normal operation. The minister of finance is authorized to seize immediately any or all petroleum producing or distributing organizations if he judges this to be in the public interest. When the minister of finance judges it necessary, he is to place before the council of ministers proposals for all or any seizure of property, indemnification for which is to be made later in accordance with Article 10 of the original monopoly decree of June 28. The stamp tax director can impose fines up to 25,000 pesetas on any interest obstructing the execution of the above provisions. Criminal proceedings and higher fines may be inflicted upon a majority vote of the cabinet.

Since the original decree of June 28 automatically prevents all ordinary legal recourse to the courts for the protection of property and provides a special organization to determine indemnification, this provision amounts to complete confiscation practically without redress; the interested company only being allowed to make representation to a committee which may decide arbitrarily on its value.

French Seek Monopoly

Spain lacks domestic supplies of oil and is an important market for Royal Dutch Shell and American Standard interests. While the loss of this market, together with a refusal to indemnify property owners, would be a severe blow, the greatest danger lies in the possibility of other neighboring countries, particularly France, in following suit.

It will be recalled that April 1, 1927, was the original date set for the establishment of a French state monopoly for the importation of all oil products into France but that through a compromise agreement between the government and the promoters of this legislation a delay until January 1, 1928, was accepted for the actual establishment of such a monopoly. Further legislation was, and is still, needed covering the general regulations for the organization of the import monopoly, either by the state or through its concession to a company under state control. This date of January 1 is not imperative but depends upon the results of investigations made by a committee of 44 members designated equally by the chamber of finance and mines committee. It is understood that a majority of this committee favor early enactment of monopoly legislation.

Several bills have been introduced into the French chamber of deputies for the operation of a petroleum monopoly. Prominent among these is the Margaine bill, which calls for the formation of a company with a capital of 400,000,000 francs, with half of the shares plus one to be subscribed by the state. Private refineries would only operate on concessions from the government and all installations, warehouse, tanks, tank cars and barges would be subject to requisitions for which an indemnity would be paid.

In France, the chief obstacle to the monopoly has been based on the difficulties encountered in securing the necessary operating capital and credits. In Spain, this obstacle was not anticipated but has arisen, nevertheless, much to the discomfiture of the banking group who sought to recoup previous financial losses on government financing by means of this oil monopoly, and now find themselves forced to advance further huge sums to carry on this oil monopoly.

Subsidy in Italy

While entertaining ideas of a complete state monopoly of oil in Italy, as yet the only material evidence of this turn of mind exists in the state subsidized oil company known as the Azienda Generale Italiana Petroli. In 1925, Italy consumed 900,000 tons of all petroleum products, only 2 per cent of which was supplied from domestic sources. The official statements made on the formation of this company deny all intention of monopolistic control. It is supposed to "assist" private enterprise and exercise disciplinary control on the operations of foreign oil companies in Italy by selling oil at reduced prices. Its original capital of 200,000,000 lira has been spent twice since its formation in 1926 and operations continued only by reason of liberal access to the national public treasury. Political pressure is exerted on the oil-consuming public through the Fascist organization to purchase only the products of the A. G. I. P., as the semimonopoly is popularly styled.

Russian Nationalization

Russian, of course, represents a complete nationalization of petroleum production and monopolistic control of both domestic and foreign sales. Oil is Russia's chief and practically sole important source of revenue from abroad. The demands of other branches of the Russian government on this revenue have been such that funds for explorational work, maintenance and replacement of equipment in the oil industry itself have suffered to the extent that in the near future the Russian government will be faced with the alternative of a general breakdown of the industry or the forced co-operation with foreign capital and technical services.

Rumania's Restrictions

Rumania, by its mining law of 1921, nationalized its petroleum industry ostensibly for the highly patriotic and desirable purpose of protecing itself from foreign exploitation of so vital a national resource. None but Rumanian citizens may hold title to oil properties and no thought of control of actual production or sales was expressed or implied. Here nationalization and monopolization amount to one and the same thing.

The most elementary fact that the petrleum industry required tremendous amounts of capital for its continuous operation and that Rumania lacks such capital was ignored. The Rumanian fields are among the oldest in the world in continuous production. In 1926, production reached a new high figure for all time and it is commonly accepted that this production could have been doubled with slight effort were it not for the restrictive governmental regulations, taxes and political interference. The Rumanian oil industry is practically bankrupt, unemployment exists on a widespread scale and this ready national asset has become a constantly increasing liability.

Poland's Cartel System

Poland prefers the cartel system and is now giving serious consideration to a new petroleum cartel to control oil production and sales. The old Polish cartel for oil did not function efficiently because, while prices were regulated by the cartel, the actual sales were transacted by members and an abuse of this privilege destroyed all the benefits possible under the former organization. The new cartel proposes to open sales and distribution offices to transact all business in the name of the cartel itself.

Greece has had a kerosene monopoly for years. A number of rumors have recently discussed the early probability of a gasoline monopoly to Royal Dutch Shell interests in return for a loan for highway development projects.

Turkey has, among other monopolies, one for petroleum which efficiently prohibits the functioning of the natural laws of supply and demand. While this monopoly cannot be said to function efficiently, much of its apparent success is due to the fact that the distribution facilities and personnel of one of the large American oil companies actually carry on the business, utilizing Russian oil supplies exclusively.

Japan and China

Quite recently Japan has intimated that a conference may shortly be called to discuss the possibilities of governmental control of production and sales. Such intimations are periodic in Japan whenever the domestic producers and refiners are embarrassed by low international prices on oil products. A law establishing a scale of subsidies for domestic producers has recently been established.

The new Nationalist party of China is favorably disposed towards a kerosene monopoly and has made several attempts, unsuccessfully to date, to establish such a monopoly largely assisted by Russian influence.

Australia, through the Commonwealth Oil Refiners Co., Ltd., has subsidized the refining and sale of oil products for a number of years at a considerable expense and drain on the public treasury.

Mexico's Plans

Governmental control of the oil industry in Mexico is too much with us to call for additional comment at this time. Sufficient to note that such legislation has practically bankrupt the national treasury and inflicted great hardships on vast numbers of the population. Not the least effect of Mexico's difficulties with governmental control of the oil industry has been the spread of these ideas to other Latin American countries on the threshold of untold development and prosperity by reason of their possible but yet unproven oil resources. We refer to Chile, Colombia, Peru and the Argentine.

Chile, by an amendment to article five of the national mining code, which now reserves all guano and nitrate of soda deposits to the state, now includes all petroleum deposits and all petroleum concessions and claims now in force that are not developed within one year from December 26, 1926, are cancelled and revert to the state.

Proposed new legislation in the Argentine leans toward a nationalization of production and all sales privileges to be delegated to a monopoly. A partial sales monopoly is now in effect. A considerable legislative battle to decide the question of national versus provincial rights must be settled before any such national legislation may be enacted.

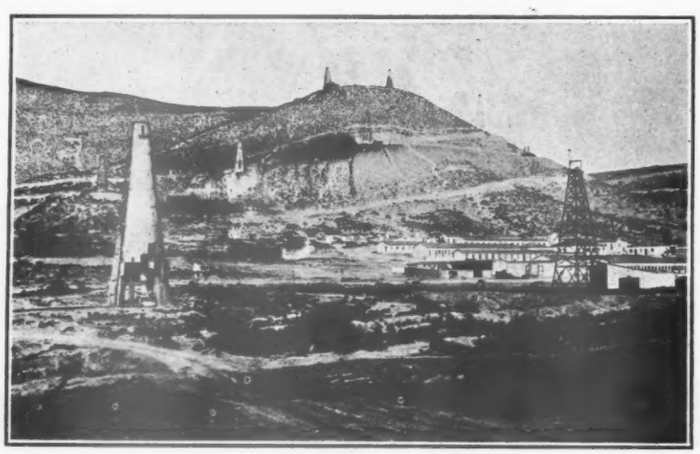
Colombia's Concession

In Colombia a monopoly is about to be granted indirectly to the Anglo Persian Oil Co., through its representative, H. I. F. Yates, for the exploitation and development of some 2,500,000 hectares of land extending along the boundary of Panama from the Atlantic to the Pacific Ocean for a period of 50 years. This production monopoly is to be granted by the terms of the Sanchez bill, which practically nationalizes the petroleum industry of Colombia so far as government lands are affected, and simultaneously practically makes the development of privately owned oil lands impossible.

Aside from the economic and commercial aspect of such a prospect, the strategic value of such a location to the An-

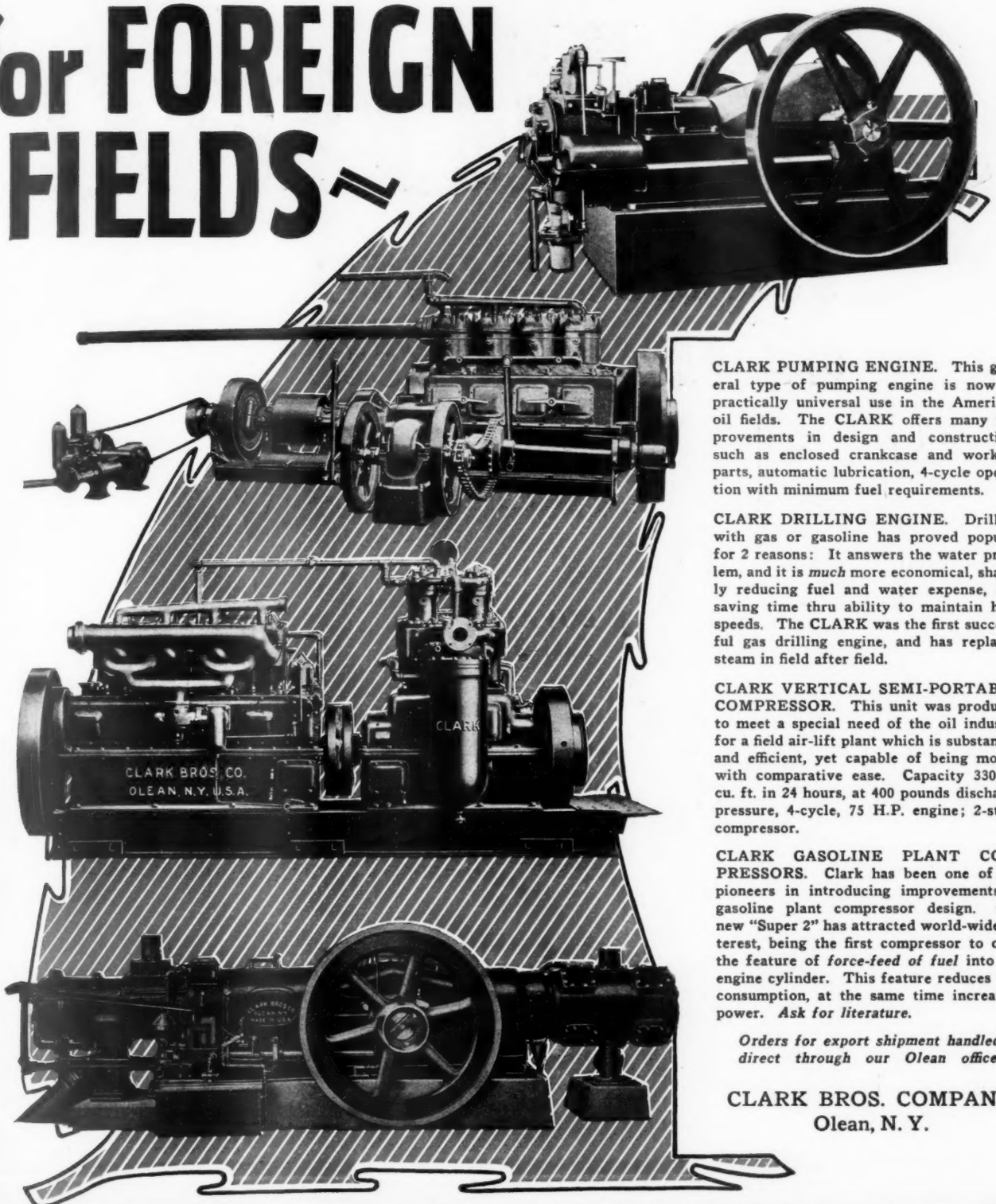
(Continued on Page 184)

OIL DEVELOPMENT IN ARGENTINA



Properties of Cia. Commercial y Industrial de Petroleo in Comodoro Rivadavia Field.

for FOREIGN FIELDS



CLARK PUMPING ENGINE. This general type of pumping engine is now in practically universal use in the American oil fields. The CLARK offers many improvements in design and construction, such as enclosed crankcase and working parts, automatic lubrication, 4-cycle operation with minimum fuel requirements.

CLARK DRILLING ENGINE. Drilling with gas or gasoline has proved popular for 2 reasons: It answers the water problem, and it is *much* more economical, sharply reducing fuel and water expense, and saving time thru ability to maintain high speeds. The CLARK was the first successful gas drilling engine, and has replaced steam in field after field.

CLARK VERTICAL SEMI-PORTABLE COMPRESSOR. This unit was produced to meet a special need of the oil industry for a field air-lift plant which is substantial and efficient, yet capable of being moved with comparative ease. Capacity 330,000 cu. ft. in 24 hours, at 400 pounds discharge pressure, 4-cycle, 75 H.P. engine; 2-stage compressor.

CLARK GASOLINE PLANT COMPRESSORS. Clark has been one of the pioneers in introducing improvements in gasoline plant compressor design. Our new "Super 2" has attracted world-wide interest, being the first compressor to offer the feature of *force-feed of fuel* into the engine cylinder. This feature reduces fuel consumption, at the same time increasing power. *Ask for literature.*

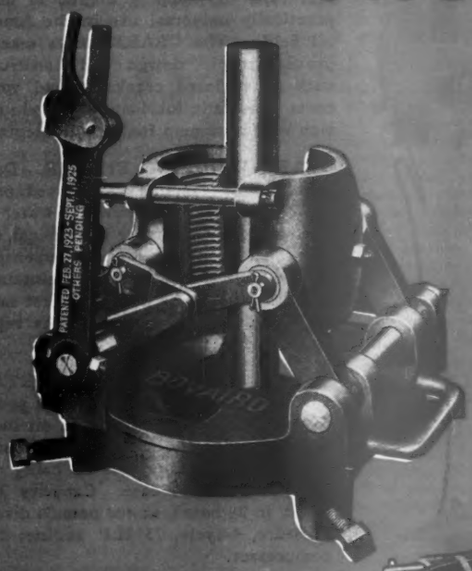
Orders for export shipment handled direct through our Olean office.

CLARK BROS. COMPANY
Olean, N. Y.

CLARK

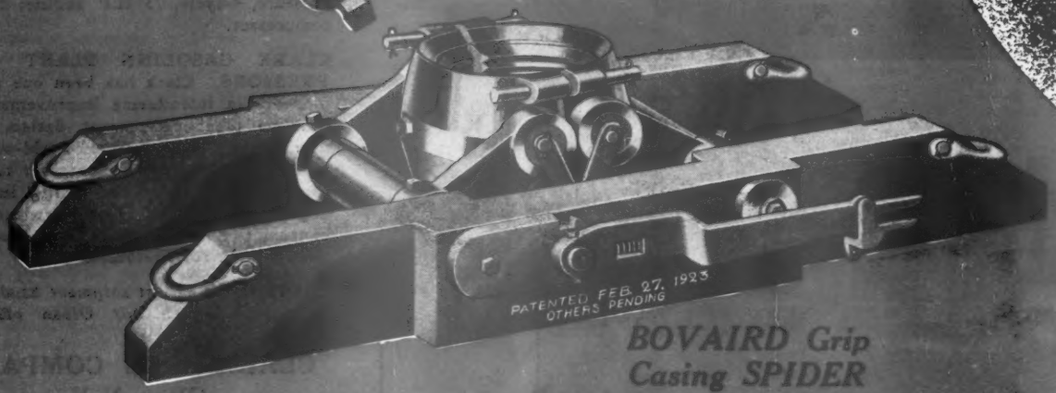
At Home—

in all parts of the world

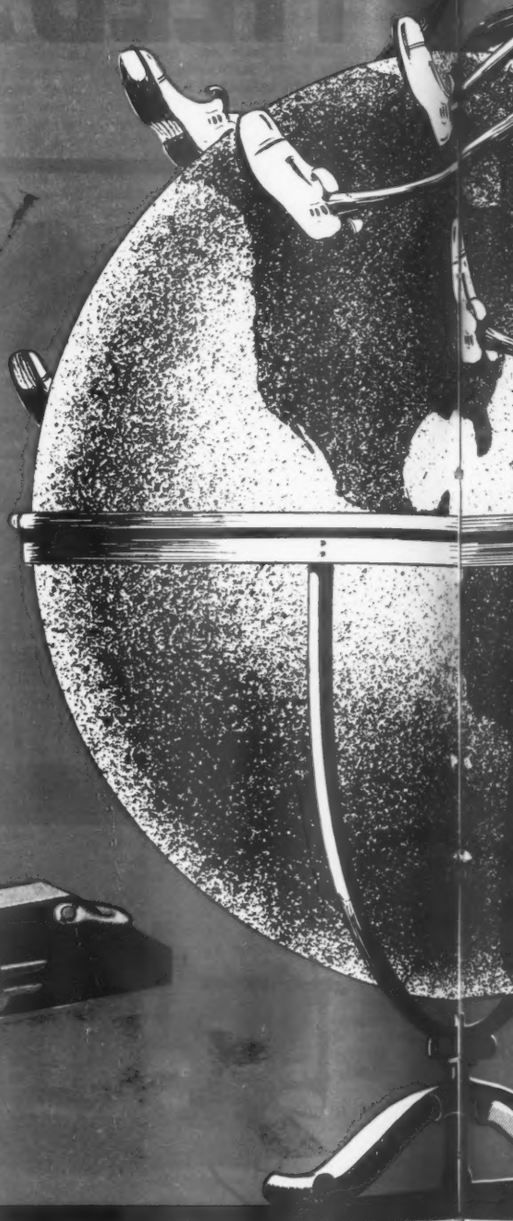


BOVAIRD Grip Tubing SPIDER

BOVAIRD SUPPLY CO.
904 Mid-Continent Bldg.,
Tulsa, Okla.



BOVAIRD Grip Casing SPIDER



BOVA

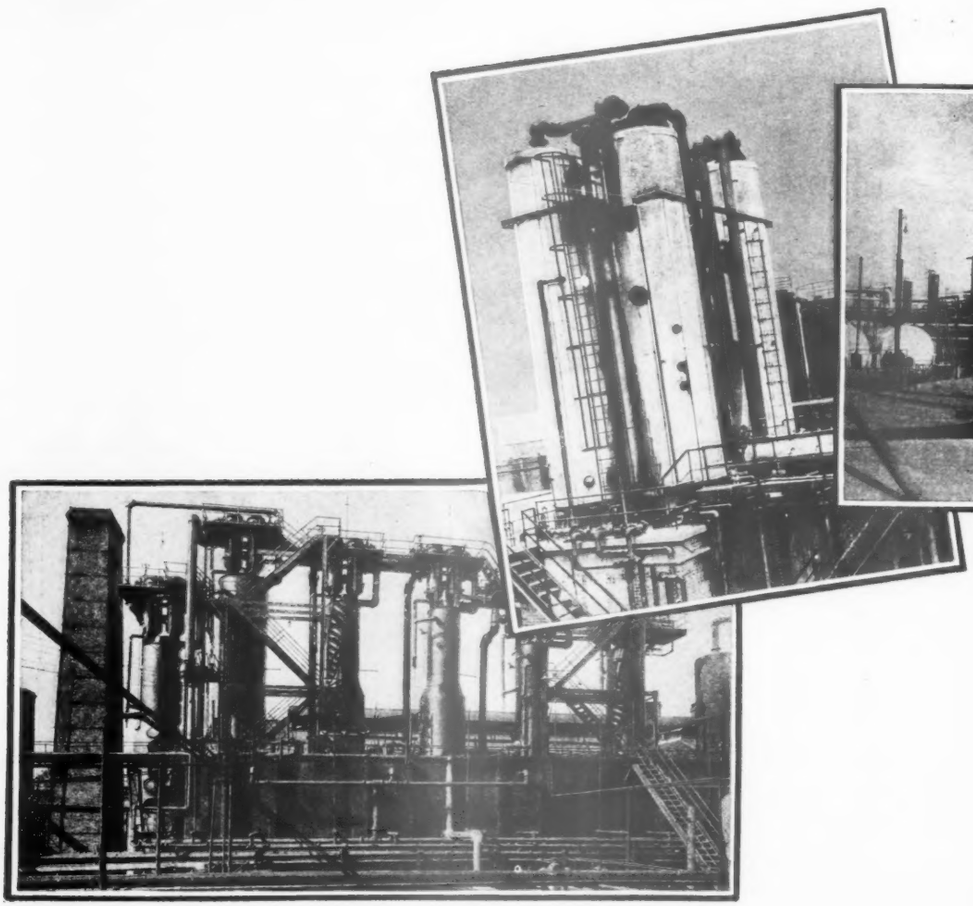
GRIP CASING and

AND THE BOVAIRD CASING ELEVATOR

recently ran 6,184 feet of 5 3/16 inch of 20 lb. seamless casing for the Group Number 1 Oil Corporation at Texon, Texas. No difficulty whatever was experienced, and the casing was picked off the bottom several times after it was landed—the Elevator working perfectly.

AIRD

d TUBING SPIDERS



What Badger Service Offers The Oil Industry

THE Badger Systems and Equipment for fractionating petroleum are furnished by the oldest and largest builders of efficient distillation apparatus in the United States.

Badger Service is complete and comprises:

Competent Engineering Staff.
Laboratory and Small Scale Experimental Plants.
Manufacturing and Construction Organization and Facilities.
Operating Supervision.

Badger Systems are the result of extended practical experience, extensive and careful research, and the most efficient engineering. A guaranteed Badger plant costs less for the same results than substantially any other system.

Topping plants–Fractionating Towers and Systems–Pipe Still Units–Treating Plants–Lubricating Oil Distillation and Refining Systems–Natural Gasoline Recovery Plants–Complete Refineries and Refinery Equipment.

The following Companies are some of those who have purchased BADGER Equipment:

Magnolia Petroleum Co., of Texas
Roxana Petroleum Corp.
Craig Oil Co.
Freedom Oil Works Co.
White Star Refining Co.
Gulf Refining Co.
Skelly Oil Co.
Phillips Petroleum Co.
Pierce Petroleum Corp.
Tide Water Oil Co.
Anglo-Persian Oil Co., Ltd.
Empire Refineries, Inc.
Marland Oil Co.
Vacuum Oil Co.
Associated Oil Co.
Barnsdall Corp.
Humble Oil & Refining Co.
Tidal Refining Co.
Standard Oil Co., of N. J.
General Petroleum Corp.
Beacon Oil Company
Lubrite Refining Co.
Pennzoil Company
Shell Company of California

E. B. BADGER & SONS COMPANY

New York · Kansas City · Tulsa · Los Angeles · Ann Arbor · Boston

Venezuela to Show Increasing Activity

Resumption of Operations After Curtailment of Past Six Months Likely Early in the Coming Year. Progress Noted

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 26.—All indications point to increasing activity in the near future in the exportation of oil from Venezuela and in the competition in the markets of the world that will come from that country. There has been a lull in oil company activity in Venezuela but during the past four months this has changed according to most reliable reports that have reached this country.

As is well known the three large producing oil companies of the Maracaibo Basin curtailed their drilling work and stopped construction in April. Then there followed a lull until last July when signs of activity began and today these indications are being verified by reports of preparations and activity in the resumption of production.

The three large producing oil company on a pipe line to connect the Rio Tarra Field with a loading station somewhere on the Rio Catatumbo.

Also to the west of Maracaibo an American company is preparing to spud in in the Rio Palmas Field.

It is probable, according to reliable reports, that production will soon be obtained in the Urumaco Field.

In the Mara district work has been speeded up and an American company will go after production after having drilled structural test wells.

The foregoing indicates the lines of activity that have been mapped out in Venezuela and are being pursued at the present time. More important still are the plans for transportation of oil to be exported, the increasing oil production that has been developed and shut in and the indications that refining operations will play a more important part in Venezuela.

Maracaibo Basin

For a long time transportation has been the chief problem in the Maracaibo Basin. In last April the potential production of the various fields exceeded available transportation about two and one-half times. Since April one American company has obtained three tankers and is to receive six more as soon as they can be constructed. Another company owns six tankers that are building and which should be ready for service within the next four or five months. Seven tankers are being built for a Dutch-English company or are now on their way to Lake Maracaibo. An English company is about to build, if the work of construction has not already begun, three tankers which will be used to carry oil from the lake to its refinery at Aruba. It is probable that by next April these 25 tankers, each carrying from 15,000 to 17,000 bbls. of oil, will be in active service. That will permit an additional export of 125,000 bbls. per day as estimated by oil men on the ground.

Statistics that have been received here indicate that producing companies are already utilizing a portion of these transportation facilities. Exports from Venezuela from all fields have greatly increased during July, August and September, compared with the exports for those months in the previous year. For instance in July, 1926, the exports amounted to 2,763,427 bbls., compared with 4,237,773 bbls. last July. In August, 1926, the exports were 2,921,411 bbls. compared with 4,639,322 bbls. in August of this year. In September, 1926, the exports were 2,754,889 bbls., compared with 5,069,044 bbls. in September of the present year. The exports for September of this year are the greatest in the history of oil development in Venezuela. It is stated that the belief prevails there that the monthly exports will not drop below 5,000,000 bbls., and in many quarters it is believed that 6,000,000 bbls. will be the minimum to be exported.

Pipe Line Project

An American company operating producing fields on the west side of Lake Maracaibo is reported to be considering the feasibility of moving its lake loading station from the La Rosa Field to the north end of the lake and of piping all of its production in the Lagunillas, Punta Bonitez, La Rosa and Ambrosio fields to that location. The construction of a breakwater is one of the possibilities for this enterprise. It has been reported in Maracaibo that an English company operating in the Rio Tarra Field has engineers and a construction gang at work clearing a right of way for a pipe line from that field to some point to the Catatumbo River.

Some 20,000 tons of material are now being delivered for the Mexican Eagle Co. to the Island of Aruba where that company is planning to erect a refinery. It is understood that about 8,000 tons of this material are being shipped from the company's properties in Mexico and that 12,000 tons were purchased in Holland.

The Mexican Eagle Co. also has awarded a contract to an American company to erect immediately 23 steel storage tanks, each of 76,000 bbls. capacity. It is expected that this storage will be completed by the first of next May and that it will be built near Orangestadt on the southwest end of the island at a place where there is 18 feet of water within 200 feet from the shore.

It is also reported that the Mexican Eagle has contracted with the Venezuelan Oil Concessions for 3,000,000 bbls. of its production yearly and that this contract will extend from 1928 to 1934. It is also said that the same company is building three lake tankers which will haul a total of about 400,000 bbls. monthly. In Maracaibo for some time there has been a persistent rumor that a large American company, which has productive fields in the Maracaibo Basin, will erect a refinery somewhere along the shores of Lake Maracaibo, the Paraguana Peninsula or Aruba. It is reported that the plant will be capable of handling from 40,000 to 60,000 bbls. of oil a day.

In Falcon Province

A great deal of interest has been shown by English and American companies in northern and eastern Falcon. One American company had its geologists in that section south of the River Tocuyo for some months and it is reported that that company is now clearing two locations for drilling.

For some time an English company has been drilling along that river and it is now about to construct a 15,000-bbl. steel storage tank. It is stated that the local manager has requested the London office to permit him to construct four more tanks in that location of 55,000-bbl. capacity.

Another English company is preparing to sink a second well in the central area of the Buchivacoa district, 1 mile east of the discovery well Nombre Pintado. An American company has started a wildcat about 12 miles from La Ceiba, a town on the southeastern short of the lake.

Still another American company is preparing to drill off the shore of Ambrosa.

Wildcats Being Drilled

Three wildcats are being drilled off the El Mena Field near La Puerta.

A deep test of "El Tigre" structure in the district of Mara is being planned for by another American company which has a derrick and boilers on the ground.

During the three months of July, August and September in the Mene Grande Field 12 wells have been brought in, the deepest being 4,240 feet, the others ranging down to 2,245 feet. Of these, four were dry, one giving an average daily production of 2,700 bbls, the others ranging from 1,300 bbls. to 460 bbls.

The exports of oil from this field were 405,706 bbls. in July, 510,838 bbls. in August and 775,098 bbls. in September. There has been a rumor that in this field the operators are planning to run the production up to 56,000 bbls. a day. Recently an American company has been engaged to build a pier at the lake loading station, San Lorenzo.

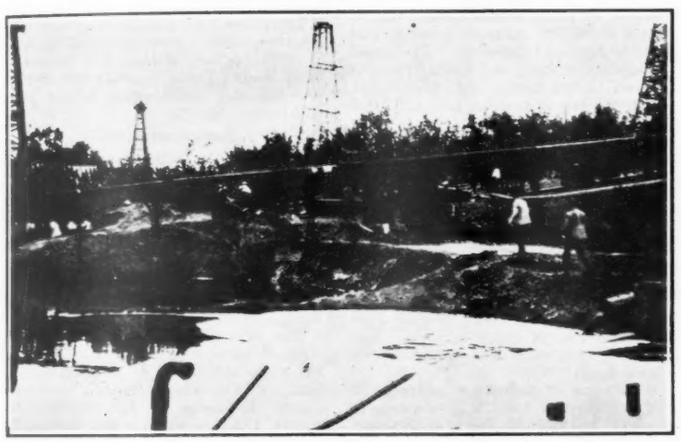
In the Lagunillas Field there have been completed during the three months ending with September 10 wells with depths from 3,231 feet to 4,010 feet, all of large production. The best well completed in this field north of the discovery well has an average daily production of 7,000 bbls. and the least productive is capable of giving 1,950 bbls. through a three-fourths-inch choke.

The exports from this field were 2,194,897 bbls. in July, 2,421,265 bbls. in August, and 2,764,930 bbls. during September.

The three companies drilling in this field have increased the number of strings they are working there and have increased the amount of their exports. One of these companies, it is reported, has received orders to increase its drilling program and if that is the case the

(Continued on Page 209)

FLOWS "100 CARS" OF OIL DAILY



View of wells near No. 90 Romano-Americana at Tuicani, Moreni Field, Rumania. This well flows at the rate of 100 cars a day and the oil is being discharged into earthern reservoirs, commonly known as "batals."

panies of the Maracaibo Basin have brought many more tankers into Lake Maracaibo and are having others constructed for delivery in the next few months.

Two weeks ago an English company began unloading material for the construction of a large refinery on the Island of Aruba.

One large American company, it is reported, is considering the construction of a refinery either on Aruba or on the peninsula of Paraguana.

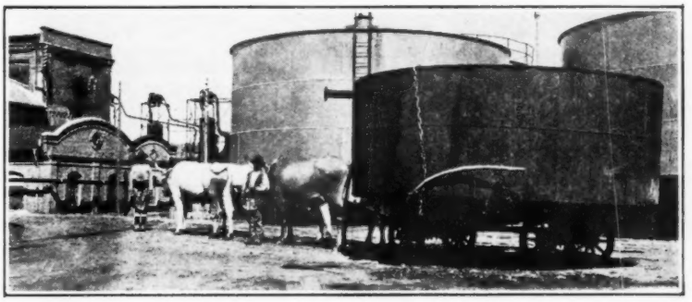
It is reported that an American company has plans to move its lake loading station to the Island of Espara, which lies just off the mouth of Lake Maracaibo or to Punta Palmas, a point to the north of the inner bar of Lake Maracaibo and to the south of the outer bar, to which location it plans to carry by pipe line all of its production in the Lagunillas, Punta Bonitez, La Rosa and Ambrosio fields. In the eastern part of the state an English company is preparing for production and has let a contract for the construction of a small amount of steel storage.

New Locations and Extensions

In this same region south of the Tocuyo River an American company has made two locations for drilling.

Work has been started by an English

HAULING TANKS IN RUMANIA



Venezuela Second in Monthly Output

Potential Production Estimated More Than 14,000,000 Bbls. a Month. Other Developments in South America

(Specially Contributed)

At the end of the first six months of 1927, Venezuela ranked fourth in the world's production of oil, being surpassed only by the United States, Russia and Mexico. In the next four months Venezuela surpassed both Russia and Mexico and assumed second rank on a basis of monthly production. October, 1927, production, the latest period for which statistics are available, was 6,023,704 bbls. in comparison with 3,349,872 bbls. for the same month last year.

The monthly production for the first six months of 1927 has averaged 4,517,367 bbls., with a total of 27,104,203 bbls. for the same period. The production of Venezuela since the beginning of operations to July 1, 1927, totaled 102,360,872 bbls. More than 50 per cent of this total was produced during the past 18 months. These figures give an idea of oil field development in the Maracaibo Lake Basin during the past two years.

The monthly export for 1927 has averaged 3,992,164 bbls., with a total of 23,952,987 bbls. for the first six months. The total exportation of oil from Venezuela since the beginning of operations to July 1 of this year amounted to 91,256,529 bbls.

Potential Production

The figures, however, give no idea of the possible production of oil in Venezuela. Estimates considered reliable place the present potential production at 494,550 bbls. daily, or more than 14,000,000 bbls. per month. Production to the amount of 313,300 bbls. daily, according to estimates, is shut in on account of a lack of storage and transportation facilities. Operating companies, nevertheless, apparently are not planning to curtail their exportation.

The production of 92,000 bbls. daily in the Lagunillas Field, in which the first well was brought in, May, 1926, and its potential output of 205,000 bbls. daily, upset the calculations made by the oil companies for their transportation needs, and resulted in a considerable curtailment of the operations of the three principal producing companies in April of this year. Since that time these companies have reduced their personnel approximately 30 per cent. From the present outlook, moreover, there seems little likelihood for the resumption of active operations in January, 1928, as expected, since the increased transportation facilities which will be available by the end of this year will not be sufficient to take care of the present potential production.

According to the latest reports, there are now 9,522,500 bbls. of oil in storage, with all available storage space filled to capacity. Of the total stocks, 6,465,000 bbls., are stored by American companies and 3,057,500 bbls. by foreign companies.

Transportation From Venezuela

Transportation of oil from the Maracaibo Lake Basin is a conspicuous problem for the operating companies, on account of the bar at the entrance to the lake, which permits only boats drawing 11.6 feet of water to pass. As a result, the three exporting companies in this district are required to maintain a fleet of small tankers to transport the oil to their lake loading stations for transfer to ocean tankers. Every increase in production, consequently, calls for the construction of special tankers for service on Lake Maracaibo. The operating companies have let contracts for a large increase in their tanker accommodations, and delivery should be made before the end of the year.

To date, 800 wells have been drilled in Venezuela, of which 685 were producers. Although the operations of the three principal producing companies have been curtailed, drilling in unproved fields is increasing. Only recently four new American companies have entered the field to develop concessions in unimproved territory.

An increase in the immediate future development and exportation of oil from Venezuela will depend on the local condition of transportation and also the world market situation. It has been stated that Venezuela could, if the world market demanded, produce 1,000,000 bbls. of oil per day, or about 40 per cent of the present production of the United States, within the next five years. Considering the great development of the past two years, and the large territory yet to be exploited, this prediction seems not impossible of fulfillment.

Want Refineries at Home

The Venezuelan government is greatly opposed to the policy of the Royal Dutch Shell and other companies of locating their refineries and terminals on Dutch territory. It is expected that the government will discriminate in some way in favor of those companies which establish and maintain their refineries and terminals in Venezuela. The Minister of Interior, Dr. Pedro M. Arcaya, gave expression to this sentiment in his memoria to the 1927 Congress. This attitude of the Venezuelan government has caused the Shell interests to oppose the development of an oil port at Paraguana, and it is no doubt their desire to have the other companies locate their refineries and terminals on the near-by Dutch Islands. Their position is that they do not wish to be the only enterprise opposing the policy of the Venezuelan government.

It will be remembered that Pan American interests maintain a transshipment center on the Dutch Island of Aruba and it was thought for some time that these interests would establish a refinery at that point. However, indications now point to the probable establishment of a large refinery at Tidewater in Venezuelan territory. The Mexican Eagle Oil Co., Ltd., has started to construct a refinery at Aruba. The rapidly declining Mexican production of this company has probably forced this development.

Argentine Production

In 1926 the Argentine government had in production 361 wells in the Comodoro Rivadavia Field and 23 in the Plaza Huincal Field, with a total production of crude oil in 1926 of 742,446 cubic meters. The government refinery at La Plata which commenced operations in the last few weeks of the previous year, in 1926 produced 428,453 metric tons of fuel oil; 38,000,000 liters of gasoline and 19,000,000 liters of kerosene. The government refinery at Comodoro Rivadavia produced, in 1926, 50,000 metric tons of fuel oil, 6,000,000 liters of gasoline and 5,000,000 liters of kerosene. The small government refinery at Plaza Huincal produced 13,000 metric tons of fuel oil, 1,225,000 liters of gasoline and 1,212,000 liters of kerosene.

At present the government organization has in service six tankers, which with a new one nearing completion will give a total transport capacity of 47,644 metric tons.

The total annual capacity of the government refineries is 97,000,000 liters of gasoline, 55,000,000 liters of kerosene and 824,000 metric tons of fuel oil.

The total government production in 1926 is calculated at approximately 750,000 metric tons of crude oil, while that of private companies was approximately 450,000 metric tons.

Importation of petroleum products in 1926 amounted to 146,120 metric tons of crude oil, 344,727,152 liters of gasoline, 70,111,268 liters of kerosene, and 355,139 metric tons of fuel oil. The total value of this importation was approximately 110,000,000 pesos paper (1 peso=$0.425 United States currency.)

The director of the Yacimientos Petroliferos, Fiscales, the government oil organization, has reported to the Minister of Agriculture that his department on January 1, 1927, took over the operation of the La Plata refinery constructed by the Bethlehem Steel Co. and operated by the constructors until the first of the present year. The director states that the plant has a capacity of 2,400 metric tons crude oil daily and represents a total investment of 15,234,566.34 pesos paper. He claims that the products of the refinery are superior to imported foreign products.

Ecuador's Prodution

In Ecuador, 8,622,527 gallons of light and 345,252 gallons of heavy oil were produced during 1926. The rate of production at the end of the year would give approximately:

Light petroleum	12,600,000 gals. per annum
Heavy petroleum	648,000 gals. per annum
Total	13,248,000 gals. per annum

The consumption of petroleum products in Ecuador in 1926 and the proportion in which it was met by imports and by domestic production is shown by the following table (gallons):

	Domestic Products Sold (approx.)	Imports	Total Consump.
Gasoline	309,808	529,290	839,000
Gas oil	24,322	5,637	29,637
Kerosene	438,685	341,500	780,185

There are four petroleum refineries in Ecuador, with a total crude oil capacity of 187 bbls. per diem. The largest of the concerns has a capacity for 80 bbls. per day and is installing a new plant with equal capacity.

Australian in Chile

For several years nothing has been done in Chile in the way of prospecting for oil, and it has been quite generally believed that the mineral does not exist in commercial quantities in this country. No oil has ever been discovered and so little attention has been paid to the matter that petroleum concessions have hitherto been granted under the mining code instead of under special legislation.

The year 1926, however, brought a revival of interest in the question. In the north the Adelaide Oil Exploration Co., Ltd., of Australia formed a subsidiary under the name of the "Chilean Oil Fields, Ltd." to explore and develop the properties of the Comunidad Petroleos de Antofagasta at Siglia, a district in Antofagasta Province near the Argentine border. Reports are conflicting as to the probability that this company will find oil in commercial quantities, but the enterprise itself is indicative of the renewed interest.

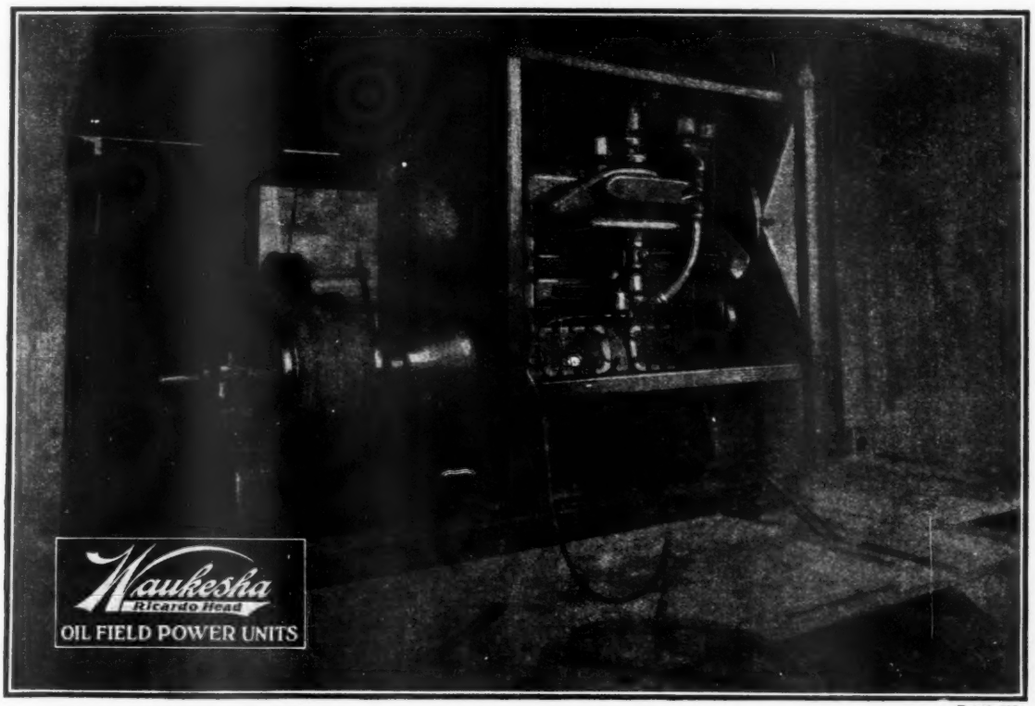
Meanwhile in the south the Pan Amer-

(Continued on Page 180)

"LAGUNILLAS," VENEZUELA OIL CONCESSIONS, LTD.

Operations being conducted much the same as the development at Summerland, Calif.

A Waukesha Oil Field Power Unit on Drilling Rig



P-767-XL

Solution of Oil Production Problems

Oil drillers and producers throughout the world have found Waukesha Oil Field Power Units invaluable for drilling and pumping. During the past year the demand for Waukesha Power Units has quadrupled. Their low initial cost, unfailing day in and day out reliability, economy of fuel and water, and ready portability have made them as great a success in Baku or Columbia, as in Seminole or along the Gulf Coast.

During the past two years Waukesha Oil Field Power Units have been adapted to cable tool drilling, supplementing a long, successful record in rotary drilling to which they were first applied. For driving oil, water and mud pumps or air compressors for "Gas Lift" no more satisfactory power is available. For economy they are unusually desirable in arid country where water is scarce and fuel expensive, for they are designed to run with "waste gas" from adjacent wells. Write for Bulletin No. 629, describing the complete Oil Field Power equipment which we build.

P-797-L

OIL INDUSTRY EQUIPMENT DIVISION

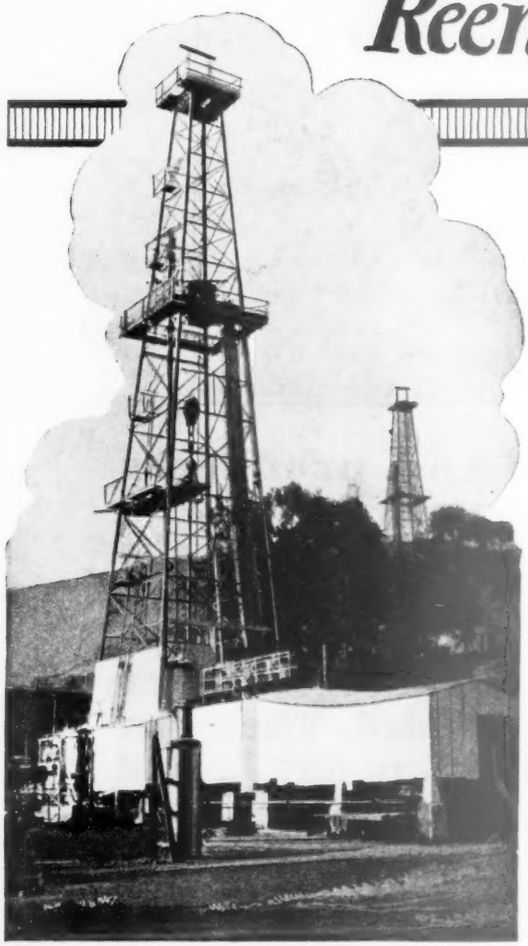
WAUKESHA MOTOR COMPANY

Waukesha Wisconsin

New York — 8 W. 40th St.
Tulsa — C. F. Camp Co.
Houston — Portable Rotary Rig Co.
San Francisco — C. A. Watts

Exclusive Builders of Heavy Duty Gasoline Engines for Over Twenty Years

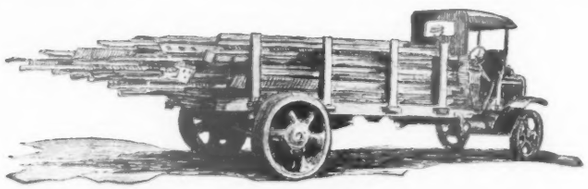
When You've Finished Making Hole Move Your "IDECO" Reenforcings to the Next



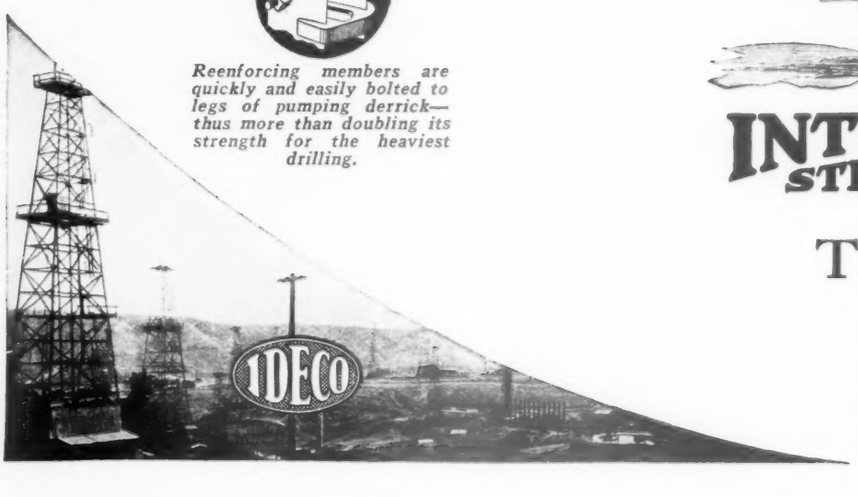
Ideco Steel Derricks have many advantages over other types of rigs on the market, but here is one of the most striking.

The complete patented "Ideco" Derrick comes equipped with Reenforcing Members which are bolted to the legs, forming a column which more than doubles the strength—a precaution against the vibratory strains of drilling.

Once Oil has been brought in and the well put on the pump,



Reenforcing members are quickly and easily bolted to legs of pumping derrick—thus more than doubling its strength for the heaviest drilling.



INTERNATIONAL STEEL IDECO DERRICKS
(GALVANIZED)

THE INTERNATIONAL DERRI

Dallas
Houston
Mexia
Wichita Falls
Pyote
Amarillo
Borger
Corsicana
Pampa
Panhandle
Shreveport
Oil City
Smackover

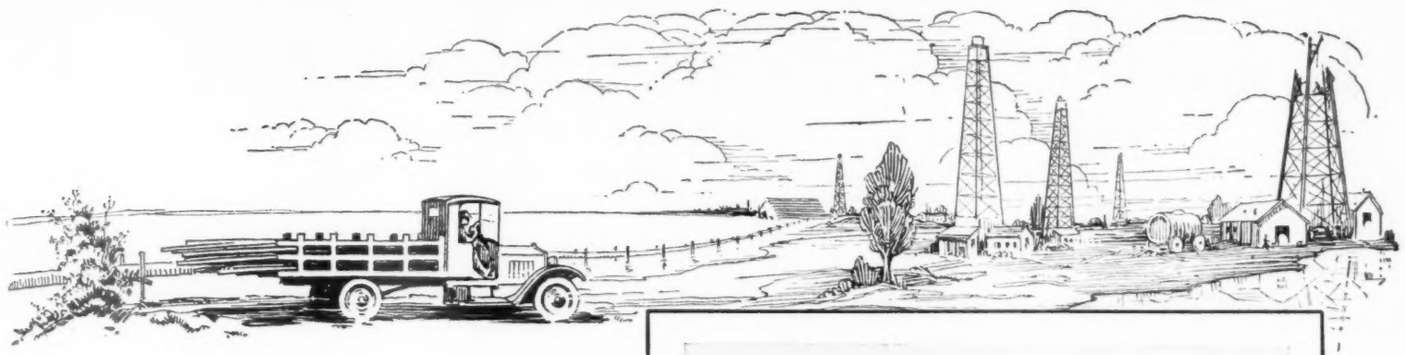
The largest company devoted exclusiv facture of steel (galvanized) equip oil, gas and artesian indu

COLUMBUS, OHIO TO

California Representativ
National Supply Co. of Ca

Export Representation: 74 Trinity Place, New York City

Colum



these doublers can be quickly removed and used on the next drilling operation.

The cost of "Ideco" Equipment is therefore materially reduced—one set of reenforcings may serve the drilling of hundreds of wells. For the balance it is only necessary to buy pumping rigs.

Take this saving into account when you plan your future purchases.

Write or call at our nearest branch for full information on International "Ideco" Steel Derricks, Bull Wheels, Calf Wheels, Band Wheels, Complete Steel Rigs, Galvanized or Painted.

INTERNATIONAL STEEL IDECO DERRICKS (GALVANIZED)

DERRICK & EQUIPMENT CO.

...any devoted exclusively to the manu-...eel (galvanized) equipment for the ... gas and artesian industries.

TORRANCE, CAL.

...OHIO ...Representative ...California ... Co. of California ... Supply Co.

Columbus, Ohio

Eldorado	Wewoka
Tulsa	Denver
Tonkawa	Casper
Drumright	Torrance
Okemah	Los Angeles
Seminole	Taft

Los Angeles *and* San Francisco, Cal.

Russians Likely to Exceed Record

Drilling Activities and Expansion of Exports Features of Year. More Expeditious Methods Are Being Adopted

(Specially Contributed)

The production of oil in Russia as well as its refining at the place of production is managed by the trusts: "Azneft" (for Azerbeidjan-Baku), "Grosneft" (for Grosny-Kuban), "Embaneft" (for Dosser and Macat in the Ural Emba district). The trust "Kubchemeftkrai" (Kuban-Black Seal oil fields) which is exploiting the oil fields of the Kuban Black Sea district has now combined with "Grosneft". Apart from that, oil is being produced in Fergan for local needs, further in the island of Chelekena in the Caspic Sea and at Ukhta in the Ural where the work is being carried on by the local authorities. All the trusts are connected with industrial state institutions and are subordinated to the Supreme Economic Council, that is to say to its Board of Mines and Fuel. Under the supervision of the Supreme Economic Council stands also the organization for the sale of oil and oil products and the former has its representative in the Oil Syndicate

Oil Sale Syndicate

The Oil Syndicate is directing the operations of the sale of oil products both in the home and world markets through its offices and representatives. Besides, it is connected with a number of companies to which it is selling its products. Such companies, the shares of which are to a large part owned by the Oil Syndicate, are "Derunaft" at Berlin, "Societe das Produits du Naphte Russe" at Paris and "Russian Oil Products, Ltd." in London and in the British Colonies.

The Oil Syndicate and the foreign firms allied to the latter are selling their products by way of wholesale and retail trading as well as by concluding agreements of supply of larger or smaller quantities with foreign firms and government institutions (for instance with the French and Italian naval ministries). Amongst the constant purchasers of the soviet oil products there are such important firms as "the Vacuum Oil Co.," "Standard Oil Co. of New York" in the United States; "Lubricating Fuel Oil Co., Ltd.," "Medway Oil & Refining Co.," "Independent Oil Distributing Co.," in Great Britain; "Petrofina Francaise," "Desmarais Freres," "Petrol Block," "Bigard Freres," in France; "Purfina," "Belgo-Caucasienne des Petroles," "Societe d'Arments," in Belgium; "Rottercamsche Oli Import Maatschapij Rotol," in Holland; Deutsche Petroleum A.-G.," "Benzolverband," "Reichskraftsprit," "Oelwerke Schiemann," "Mineralolwerke Albrecht," "Gallid," "Eriag," "Nitag" in Germany; "Societa Nationale Oli Minerale," "Rafineria di Oli Minerale" in Italy; "Banca Arnus" in Spain and many other smaller companies.

Development of the Industry

An analysis of the development of the oil industry of the Soviet Union shows the following picture:

Year	Total Prod.	Bakou 'Asneft'	Grosny	Emba	Kuban
1901	11.68	11.00	0.57	...	...
1913	9.22	7.07	1.21	0.10	0.03
1917	8.72	6.59	1.77	0.26	0.03
1921-22	4.26	2.94	1.20	0.07	0.05
1922-23	5.27	3.57	1.50	0.13	0.05
1923-24	6.04	4.23	1.63	0.13	0.05
1924-25	7.08	4.74	2.03	0.19	0.08
1925-26	8.35*	5.59	2.41	0.22	0.07
First half year:					
1926-27	5.06	2.49	1.46	0.11	...

*The first quarter (April-June) gave altogether 2.58 thousands tons. Thus we see a further increase of production.

As is to be seen from the above table the oil production of the Soviet Union in the current year is likely to exceed that of the prewar and prerevolutionary period—at Grosny the prewar level had already been exceeded in 1924. At Bakou the level of 1913 has not yet been reached, but the production of 1917 has already been equalled.

The part played by the Soviet Union in the world production of oil in 1926 is to be seen from the following table:

Oil Production in 1926

	Oil Production—In thousand Barrels	Per Cent
United States	773.0	70.72
Mexico	90.1	8.24
Soviet Russia	65.1	5.96
Venezuela	37.2	3.40
Persia	35.5	3.25
Rumania	23.9	2.19
Dutch-Indies	22.2	2.03
Other countries	45.9	4.21
Total	1,092.9	100.00

Characteristic for the development of the oil industry is the drilling activity. Altogether the drilling in Russia amounted to:

	Meters
1913	269,812
1922-23	91,735
1924-25	184,687
1925-26	240,315
1926-27 first half	178,860

Thus in this respect the prewar level has been exceeded.

Progress of Production and Refining

The productivity of drilling must be calculated in ratio of the drilling to the amount of oil production. As regards the expenditure on drilling it must be calculated in ratio to the consumption of fuel. Expressed in percentage to the oil production the consumption of fuel at Bakou in 1922-23 amounted to 14.2 per cent, in 1923-24 it decreased to 12.3 per cent, in 1924-25 to 10.5 per cent, in 1925-26 to 7.8 per cent and in the first half year 1926-27 to 5.7 per cent.

Another important feature of the oil industry is the adoption of more expedient methods of drilling and production. In 1921, only 19 rotary drillers were in use whereas at the beginning of 1927 already 1,999 were in operation. The cost of drilling per meter went down from 413 rubles in 1923-24 to 218 rubles in 1925-26.

The rotary driller is slowly but surely replacing the thrust driller and the rope driller at Baku and Grosny. Still in 1923 the production of oil took place at 54 per cent of the oil wells by means of drawing and only at 1.6 per cent by means of deep suction. Since then the ratio has greatly changed, already in 1925-26, the method of deep suction was applied at 28.2 per cent of the wells and drawing only at 24 per cent of the wells. At the same time the production of oil by means of fountains increased from 17.4 per cent to 29.3 per cent. At Baku at two-thirds of the wells in exploitation the method of deep suction has already been introduced; in the first half-year 1926-27 these wells gave 45 per cent of the total production by machinery against 32 per cent in the previous year—in Grosny they gave 65 per cent the first half-year 1925.

Use of Power

At Baku 93 per cent of all the oil wells are applying electric power, 5.5 per cent Diesel motors and only 1.5 per cent steam engines. Before the war only 30 per cent of the oil wells of the Baku district were electrified. After the revolution many steam boilers and electric plants have been newly erected, new turbines produce 20,000 kilowatts; the production of energy rose from 101,000,000 kilowatt hours in 1920-21 to 312,000,000 kilowatt hours in 1925-26.

Further improvements in the methods of oil production and refining are being introduced. The work of equipping the wells with gas takes for natural gas and of fitting them for the exploitation of the latter are almost completed. This made itself felt in the first place in the gasoline which resulted from the oil refining. Whereas in 1922-23 in ratio to the crude oil refined, gasoline was obtained only to the amount of 0.34 per cent, in 1925-26 it reached in Baku 3.4 per cent, in the first half-year 1926-27, 5.7 per cent, and in March, 1927, already 6.06 per cent. The output of lubricating oil rose from 4.1 per cent to 5.6 per cent, and the output of illuminating oil from 26.7 per cent to 27.8 per cent. In Grosny the output of benzin increased from 14.63 per cent to 15.46 per cent.

Centralized Management

This important success became possible only in consequence of the centralization of the management. The land and the oil fields, production and refining of oil, the sale in the home market as well as the policy in the world market—all these are concentrated in the same hands. The object in view is not the obtaining of profits but rather the economic interests of the Soviet Union.

The development of the oil refining industry in the last years is illustrated by the following table:

MANUFACTURE OF OIL PRODUCTS IN RUSSIA
(in metric tons)

Products	1913	1923-24	1924-25	1925-26
Benzin	262,500	163,687	318,678	461,614
Illuminating oil	1,562,200	726,779	1,029,018	1,202,207
Mixed oils	441,700	89,036	144,186	198,208
Fuel oils	4,126,200	2,313,843	2,191,726	3,082,424
Black lubricating oil	.....	13,825	18,985	42,488

The refining of oil accomplished in the various districts is to be seen from the following table:

District—	1913	1924-25	1925-26
Baku	4,554,531	3,035,165	3,458,423
Grosny	943,437	1,674,595	2,187,260
Emba	151,732	130,126	141,449
Kuban	49,770	69,405	73,869
Usbekistan	.....	15,445	15,007
Total	5,702,470	4,924,736	5,876,008

Lack Capital for Refinery

Notwithstanding the progress made in refining in the various districts, this branch of the oil industry is not favorably placed as to the supply of capital. Therefore, at present, it has been decided to enlarge the existing refinery works (Baku, Grosny) and to erect new works (Batum, Tuapse). Whereas, in the United States approximately 24 per cent of the total capital invested in the oil industry is applied to oil refineries, in the Soviet Union only 7.5 per cent is used for this purpose.

The intended enlargement of the refining works will lead to an improvement of the quality of products and to an increased market.

The improvements which have already been carried through at Baku and Grosny brought about good results.

The crude oil refined per worker per day in 1923-24 amounted to 2,527 tons, in 1924-25 to 3,768 tons, and in 1925-26 to 3,940 tons.

The number of workers employed at Baku was:

Employed at—	1913	1924-25	1925-26	Feb. 1927
Oil production	37,348	25,216	23,110	19,348
Drilling	.....	8,004	7,949	11,236
Oil refining	3,962	4,761	4,796	4,668

Impending Work

The chief stages in the further development of the oil industry of Russia are: enlargement of the existing pipe line system Baku-Batum and its transformation from a kerosene line to crude oil line; building of a new pipe line system Baku-Batum; erection of a kerosene treating plant at Batum; building of a pipe line system Grosny-Tuapse. Most of these works have already been taken in hand and will be finished in 1927-28.

According to the calculations of the Chief Board of the Mining Industry, the oil production of Russia in 1931-32 will reach 20,000,000 metric tons. Out of this 12.2 million tons are to be produced by "Asneft" (Baku), 5.7 million tons at Grosny, 0.6 million tons at Emba, 0.4 thousands tons at the Kuban Black Sea district and 0.2 thousands of tons are to be produced by the Usbekian and Turkmenian trust. Sakhalin and the other districts are expected to produce 0.4 thousands tons of oil. As regards the oil export, at this time it is expected to reach 3.3 million tons. In order to carry out this program, it will be essential, apart from the erection of new factories, to do considerable work in creating new transport facilities.

New Fields

In considering the perspectives of the development of the Russian oil industry we must take into consideration the possibility of opening new oil fields, which areas yet but insufficiently explored, but are known to contain considerable resources of oil. In view of lack of capital, the Soviet Government is yet unable to undertake the development of those oil districts; for this purpose the investment of foreign capital by means of concessions would be especially desirable.

Such districts are:

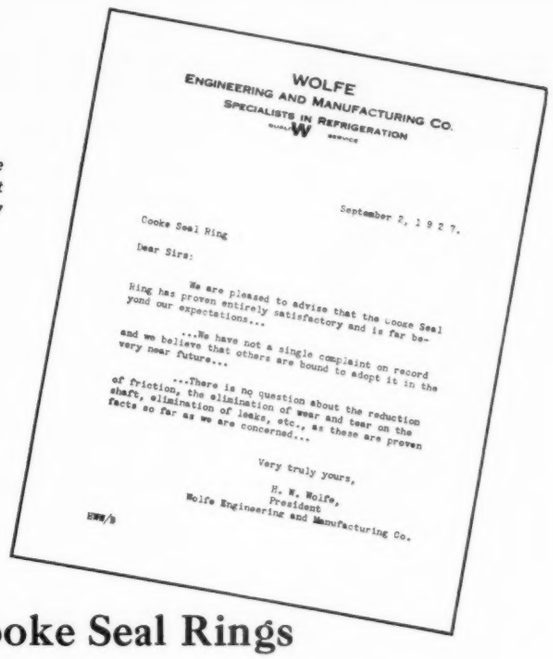
1. The Ural-Emba district with the

(Continued on Page 209)

THE FOLLOWING TABLE GIVES THE EXPORTS OF OIL BY COUNTRIES OF DESTINATION DURING NINE MONTHS OF 1925-26 AND 1926-27 IN METRIC TONS

Countries—	Kerosene		Benzine & Gasoline		Fuel Oil		Oils (Lubricating)		Crude Oil		Total		Pr. Ct. Tl. Exp.—	
	1925-26	1926-27	1925-26	1926-27	1925-26	1926-27	1925-26	1926-27	1925-26	1926-27	1925-26	1926-27	1925-26	1926-27
Italy	20,254	40,985	23,145	27,253	194,296	.....	6,179	6,676	36,817	26,564	280,691	348,501	28.8	25.6
England	54,461	106,535	98,382	121,422	53,176	23,193	11,539	20,388	.....	.....	217,568	271,538	22.4	19.5
France	.....	.....	65,939	109,596	46,916	124,617	39,753	29,252	.....	.....	152,608	263,465	15.7	18.9
Germany, Austria, Hungary, Czechoslovakia	.....	12,241	56,054	73,596	21,718	46,253	57,918	51,921	18,436	42,451	154,126	226,462	15.8	16.3
Egypt	55,048	98,048	.....	.....	.....	.....	.....	.....	.....	.....	55,048	98,048	5.7	7.0
Turkey, Greece, Bulgaria	19,983	36,272	4,008	7,172	3,041	7,184	294	413	.....	.....	27,326	49,991	2.8	3.6
Spain	.....	2,688	12,053	29,001	.....	15,329	.....	.....	.....	.....	12,053	47,018	1.2	3.4
Belgium	7,575	7,317	16,394	13,714	13,472	7,068	10,699	16,683	.....	.....	48,140	44,782	5.0	3.2
Baltic States and Finland	6,142	20,321	2,702	2,615	78	150	1,190	1,400	13,139	7,561	23,251	32,047	2.4	2.3
Denmark and Norway	.....	.....	.....	.....	.....	8,136	2,163	3,171	.....	.....	2,163	11,307	0.2	0.8
Total	163,463	323,357	278,687	384,389	332,697	478,953	129,735	129,904	68,392	76,576	972,974	1,393,159	100.0	100.0
Bunker fuel	1	75	2	1	14,390	25,142	7	90	.....	.....	14,400	25,308	1.5	1.6
Grand total	163,464	323,432	278,689	384,370	347,087	504,095	129,994	129,994	68,392	76,576	987,374	1,418,467		

From one of the oldest and largest in the industry



WOLFE
ENGINEERING AND MANUFACTURING CO.
SPECIALISTS IN REFRIGERATION

September 2, 1927.

Cooke Seal Ring

Dear Sirs:

We are pleased to advise that the Cooke Seal Ring has proven entirely satisfactory and is far beyond our expectations...

...We have not a single complaint on record and we believe that others are bound to adopt it in the very near future...

...There is no question about the reduction of friction, the elimination of wear and tear on the shaft, elimination of leaks, etc., as these are proven facts so far as we are concerned...

Very truly yours,

H. W. Wolfe,
President
Wolfe Engineering and Manufacturing Co.

HWW/b

"..far beyond our expectations"

writes

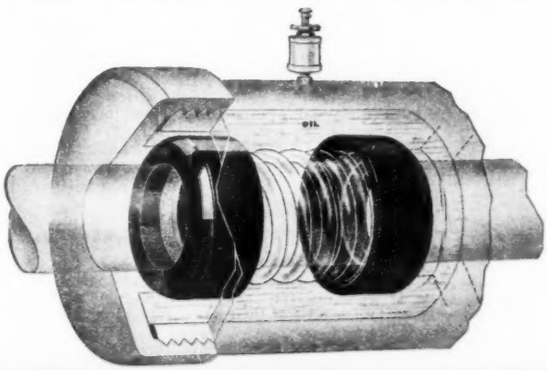
H. W. Wolfe about Cooke Seal Rings

He is commenting from the viewpoint of a refrigeration specialist. But in scores of other fields the verdict of users is equally as enthusiastic.

You will find Cooke Seal Rings specified by the engineers of the great oil companies (Standard, Sinclair, Shell, Sun, etc.). Marine engineers, oil-burner men, stationary engineers — *all* who have tested them are hearty in their praise.

Rotating *with* the shaft instead of *pressing against* it, reducing friction by 90%, they absolutely seal in all liquids and gases. Leaks are eliminated. Stuffing-box packing is abolished permanently. Motor load is reduced. Wear on shaft, scoring, hot boxes, are done away with.

New, but thoroughly tested, this revolutionary Cooke Seal Ring is something you should know about first-hand. It is very inexpensive and will outlast your pump or compressor. Send the coupon without obligation of any sort. Get the facts —today!



a—The Cooke Seal Ring, itself
b—Rubber packing
c—Follower ring
d—Helical spring

The entire assembly is lubricated and sealed with oil from the stuffing box, now used as an oil reservoir.

COOKE Seal Ring

36 North Green Street
Chicago, Illinois

ROTATES WITH

COOKE SEAL RING
36 N. Green St., Chicago
Please send me your FREE booklet without obligation.
Name .....
Address .....
City ..... State .....

THE SHAFT

Rumanian Industry in Throes of Crisis

Disorganized Transport, Falling World Prices, Internal Taxation, and Prolonged Process of Deflation Affect It

(Specially Contributed)

Before proceeding to a detailed discussion of the Rumanian petroleum industry, it may be interesting to note the relationship of Rumanian consumption to production during the past few years as compared with 1913.

In 1913, the consumption was 812,897 metric tons for a population of 7,500,000 inhabitants, representing an average of 108 kilograms per head. In 1919, although the population had more than doubled, the consumption had fallen to 471,674 tons, or nearly half. This was due to general disorganization resulting from the war. Since the consumption has increased annually. The increase was 17 per cent in 1920, 18 per cent in 1921, 27 per cent in 1922, and only 8.0 and 7.8 per cent in 1923 and 1924, respectively. In 1925, the percentage increase was 14 per cent compared with the previous year, while 1926 showed an increase of 15 per cent over 1924.

The consumption of petroleum products has not yet again reached the figure per head of population for 1913; in 1926 it was 75 kilograms per capita head. The proportion of residues to total consumption decreases steadily each year. In 1913, it represented 86 per cent, but in 1926 it was only 75 per cent.

In tabular form this may be expressed in table one.

Sixth Product

Ranging sixth among the oil-producing countries of the world and contributing 2.5 per cent of the world's total production of petroleum, the petroleum area of Rumania extends northward along the foothills of the Carpathians from the Yugoslav frontier on the Danube to Bukowina although discoveries have been limited up to the present to the region between the Jalomitza and the Bistritza.

The principal producing areas are concentrated within four districts of the Old Kingdom, namely: Prahova, Dambovitza, Buzau and Bacau, of which the first named is the most important. The principal fields are Baicoi, Moreni, Campina, Bustenari and Tintea, all in the district of Prahova.

In addition to the numerous private pipe lines connecting the oil wells with the refineries, the Rumanian state maintains four lines: one extending from the oil fields to Bucharest, two others from the oil fields via Bucharest to Giurgiu on the Danube, and the fourth and principal line which begins at Baicoi and proceeds to the Black Sea port of Constantza via Ploesti and Buzau.

Due to the inadequacy of existing facilities for the transport of oil products and the insufficiency of accommodations offered by the present pipe lines, there is now under construction a project for the commercialization of the existing state pipe lines and the construction of a new line to satisfy transportation requirements for some years to come. In view of the continual increase in production from year to year, the solution of the problem of transportation is becoming ever more insistent.

Increase in Drilling

The intensification of exploitation of the Rumanian fields is well illustrated in the following table showing the number of meters bored in 1913 and the past five years:

Year—	Meters Bored
1913	95,000
1922	88,527
1923	123,260
1924	166,936
1925	204,407
1926	268,000

The situation, as regards the wells in existence during the same period, appears in table two.

As of December 31, 1926, there were 159 oil companies with a total paid-in capital of 10,712,739,991 paper lei; 27 companies with a paid-in capital of 11,336,094 pounds sterling; 35 companies with a capital of 879,237,500 French or Belgian francs or Italian lire; and 3 companies with a capital of 2,050,000 Dutch florins.

Comparison of Production

A comparison of the production of the 10 leading companies for the first six months of 1927 as compared with the first six months of 1926 is given in table three.

To afford a basis of comparison the total crude oil production for the month of June and the first six months of each of the past four years is given as follows:

	1924	1925	1926	1927
		(Metric tons)		
June	149,601	185,622	280,907	325,000
Jan. 1 to June 30.	859,325	1,062,000	1,505,018	1,740,031

(Table 1)

	1913 Tons	1924 Tons	1925 Tons	1926 Tons
Motor spirit	30,131	83,456	76,528	72,116
Illuminating oil	51,396	103,369	118,319	138,522
Gas oil	.....	28,103	35,964	36,720
Lubricating oils	33,725	73,523	76,243	68,967
Paraffin wax	1,425	1,812	1,228	1,775
Residuals (for industry)	560,492	527,104	623,364	724,802
Residuals (for other uses)	135,728	152,650	187,826	249,747
Total consumption	812,897	970,017	1,119,472	1,292,649
Total production	1,775,225	1,851,303	2,316,504	3,240,000
Consumption as per cent of production	46%	52.4%	48.3%	40.0%

(Table 2)
Number of Oil Wells in Existence

Year	Hand Wells: Aband. or Suspended	Hand Wells: Drilling	Hand Wells: Producing	Drilling Wells: Aband. or Suspended	Drilling Wells: Drilling	Drilling Wells: Producing
April 1 to March 31, 1913 to 1914	1,311	376	494	889	480	1,006
1922	1,592	220	325	1,444	525	827
1923	1,634	383	307	1,687	703	911
1924	1,556	453	321	1,791	705	1,056
1925	277	273	266	279	652	1,093
1926	326	287	271	336	786	1,334

The increase in the total production of crude oil is given in the following tabulated schedule:

Year April 1 to March 31.	Metric Tons	Increase	Proportion between meters bored and metric tons produced.
1913 to 1914	1,847,875		19.4
1922	1,365,830	18	15.3
1923	1,515,658	10.5	12.3
1924	1,851,303	22	11
1925	2,316,504	25	11.3
1926	3,243,383	39.9	12

Output by Companies

Although there are more than 200 joint stock oil companies engaged in the exploitation of the oil resources of Rumania, the output of 10 companies accounted in 1926 for the production of about 92 per cent of the total output of oil in the country. These companies are as follows:

Name—	Pro. in Metric Tons 1925	1926	Character of Capital
Astra Romana	392,944	632,202	Royal Dutch
Credit Minier	379,249	591,707	Rumanian
Steaua Romana	319,628	406,406	Rumanian, British, French
Concordia	147,596	389,541	Belgian, French, Rumanian
Phoenix Group	268,752	360,189	British
Romano-Americans	220,032	212,752	American
I. R. D. P.	253,836	179,033	Rumanian
Colombia	106,733	95,943	French
Aquila Franco Romana	30,849	71,758	French
Petrol Block	26,167	37,105	Rumanian
Total	145,768	2,976,636	

(Table 3

Production by companies:	January 1 to June 30 1926	1927
	(Metric tons)	
"Creditul Minier" (Rumanian)	302,985	285,147
"Astra-Romana" (Royal Dutch Shell)	305,843	305,255
"Steaus-Romana" (Rumanian, British and French)	173,024	250,183
Phoenix Oil & Transport Co. (British)	160,057	200,724
"Concordia" & "Internat'onals" (French and Belgian)	36,618	37,458
"Romano-Americana" (S. O. of N. J.)	109,700	101,900
Industria Romana de Petrol (Rumanian)	84,157	115,125
"Colombia" (Rumanian and French)	50,545	47,570
"Aquilla Franco-Romana" (French)	37,893	27,314
"Romana-Belgiana" (Belgian)	8,207	14,819

(Table 4)

Exports:	August 1926	August 1927	January 1 to August 1926	January 1 to August 1927
		(Metric tons)		
Gasoline	52,264	66,771	254,557	367,708
Refined oil	44,923	69,147	304,859	393,282
Lubricating oil	4,056	1,928	22,681	41,172
Residues (gas and fuel oils)	48,965	59,341	296,499	369,140
Crude oil	.....	.....	3	1
	150,208	197,187	878,599	1,171,303

Export trade prices:	Jan. 1, '24	Jan. 1, '25	Jan. 1, '26	Jan. 1, '27	Sept. 1
	(At cents per gallon f.o.b. Constanza)				
Gasoline, light	14¾	14½	19¾	16⅛	9
Gasoline, heavy	12	11½	13½	13½	8½
Refined oil	7½	6	6¾	6½	5¼
Gas oil	7	6⅛	5	5⅞	3⅞

The export of crude oil from Rumania is prohibited and consequently all oil produced is treated in local refineries, of which there are some sixty in number, inclusive of some which are inactive.

Refining Centers

The principal refining centers are at Ploesti and Campina, situated 35 and 50 miles, respectively, north of Bucharest on the main railroad line northwest from Bucharest.

The total capacity of Rumanian refineries is 4,685,900 metric tons per annum. During 1926 a total of 3,089,777 metric tons of crude oil was treated locally, from which there resulted a total output of 3,031,428 metric tons of various oil products as follows:

	Metric tons
Raw gasoline	749,963
Kerosene	511,077
Gas oil	291,063
Residues	1,478,425
Total	3,031,428

of which internal consumption amounted to 1,292,649 metric tons, and exports 1,492,953 metric tons.

The Rumanian petroleum industry, of which a large part is controlled by foreign capital, is vitally affected by the Rumanian mining law promulgated on July 1, 1924, which provides—while respecting existing rights—for the nationalization of the subsoil. Concessions of state oil lands are now limited to distribution among local companies with Rumanian capital or foreign companies which have accepted without formal reservation the principles of the mining law.

The distribution of state oil lands under this law has greatly stimulated local production, but in a manner somewhat contrary to the anticipation of those responsible for the legislation. Lacking liquid capital, many of the local companies, which have benefited by the new areas acquired from the state, have been obliged to conclude participation contracts with foreign drillers in order to fulfill their drilling programs.

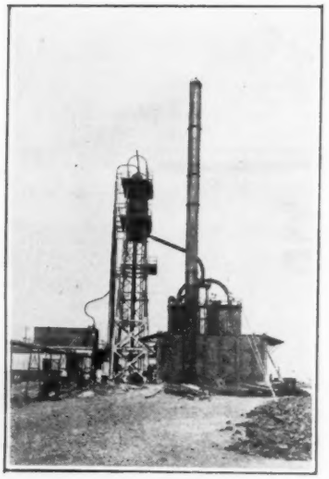
A Serious Crisis

Although the Rumanian oil industry has made considerable progress during the past few years, it is now in the throes of a serious crisis, due to a variety of causes, which include: insufficient and disorganized transport facilities, falling world market prices, heavy internal taxes, and the general check given to industrial activity by all the consequences proceeding from a relatively prolonged period of deflation. It is stated that out of 160 companies engaged in petroleum enterprises, which has prior to 1927 been one of the most prosperous of the country's industries, only 27 paid a dividend for 1926. Due to the fact that approximately 40 per cent of Rumania's production is consumed domestically and that the export trade, for the reasons cited above, is demoralized the Rumanian refiners have in the past few weeks attempted to regulate domestic selling prices. This attempt resulted in an immediate decrease in domestic prices but the Rumanian minister of industries has insisted that this procedure is unlawful and prices will shortly return to their previously unsatisfactory level.

The statistical position of Rumania's export trade is clearly indicated in table four.

While in common with the petroleum industry of the United States and other countries the Rumanian petroleum industry is laboring under serious difficulties, the present political administration is giving serious attention to the difficulties of this industry so vital to the economic welfare of the people of Rumania.

CRACKING IN JAPAN



Unit at Taurumi (Yokahama) refinery of Japan Oil Co.

7 Reasons for EMCO Number 0 Popularity

1. Mechanism extremely accessible.
2. Valve Seats cast together in one piece.
3. Domestic and Small Industrial Service.
4. For low or high pressure.
5. It's a Cast Iron Meter.
6. Measures natural—manufactured—acetylene gas or air.
7. Remove diaphragms without interfering with other parts.

EMCO
No. 0

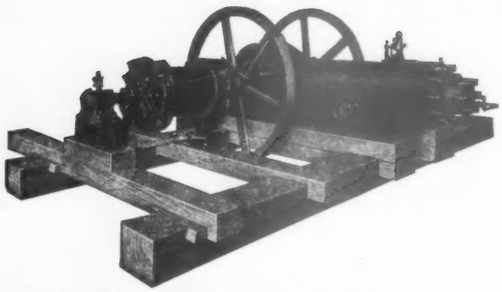
PITTSBURGH EQUITABLE METER COMPANY

PITTSBURGH, PA.

BRANCH OFFICES

New York, New York.
Chicago, Illinois.
Dallas, Texas.
Los Angeles, Cal.
Tulsa, Oklahoma.
Seattle, Washington.
Columbia, S. Carolina.
Salt Lake City, Utah.
Kansas City, Missouri.

FRANKLIN VALVELESS

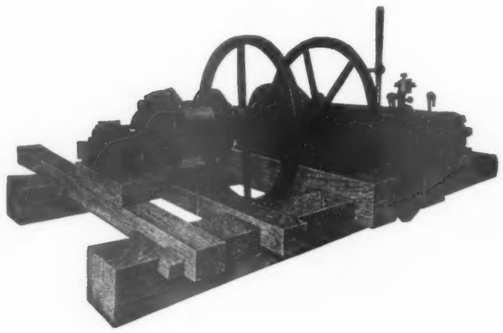


Oil Drilling Engine

For Mid-Continent and Western Service $3700. Eastern Service $2600 and $3350. F.O.B. Factory.

Gas Drilling Engine

For Mid-Continent and Western Service, $1725 and $2150. Eastern Service $1450 and $1725. F.O.B. Factory.



For Drilling

On the Twin State's wildcatter at Stillwater, Texas, W. J. Bradley, Driller, put down 500 feet of 24-inch hole in seven days drilling with a Franklin Valveless Oil Drilling Engine. The cost was $2.50 per day for water and the same for fuel oil—a saving of $30.00 per day over his previous experience with steam.

Show a drilling contractor a power plant that will drill more hole at a lower cost and with less trouble and he's "sold." That's exactly what Franklin Valveless Oil and Gas Drilling Engines are doing in fields, where steam, until recently, was the favorite.

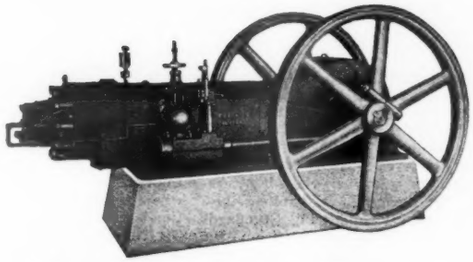
The fuel bill for a Franklin Valveless is actually less than that of a Ford automobile. Repair bills are cut to a minimum — many Franklin engines have drilled from 10 to 30 wells without a cent spent for repairs. 100 barrels of water will cool the engine and mix mud for approximately 1000 feet of hole. Try a Franklin for results and economy!

Distributed

OIL WELL SUP

Branches in All

OIL AND GAS ENGINES

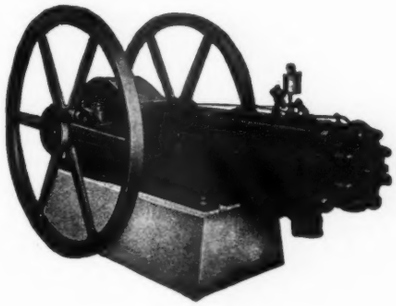


Oil Pumping Engine

In horsepowers of 30-40-50 and 75. Can be equipped with reverse motor and one way clutch.

Gas Pumping Engine

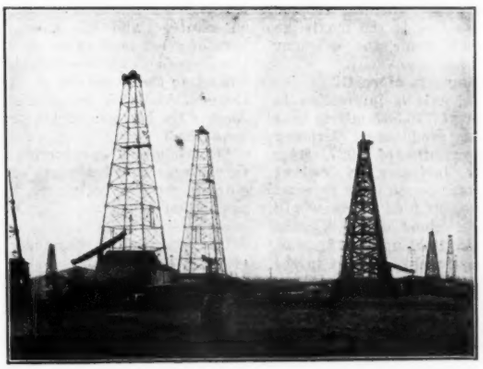
Can be mounted on same block as the Gas Drilling Engine without changing a single bolt.



For Pumping

These dependable, flexible Franklin Pumping Engines are making a name for themselves wherever used. Do your drilling with a Franklin Valveless Drilling Engine. When ready for the pumps move in a lighter Franklin if you have a new hole for the drilling engine to work on. It's one sure way to reduce operating costs.

FRANKLIN VALVELESS ENGINE CO.
Franklin, Pennsylvania



Just because Franklin Pumping Engines are light and economical don't get the idea that they aren't powerful. T. B. Slick has seven 40 H.P. Franklins at Tonkawa, Okla. Four of them have been used continuously on swabbing jobs for the past year. Mr. Slick reports "no trouble, no repairs to date."

ted By

PLY COMPANY

in All Oil Fields

Chemical, Coal and Oil Combinations

Aim to Produce Oil From Coal. Progress Made in Germany Attracting Attention. Royal Dutch Active

(Specially Contributed)

An interesting movement is progressing in the European co-ordination of interests by the chemical, coal and oil industries of Germany, France, England, and the Netherlands, in development of the numerous "oil from coal" processes, several of which are rapidly approaching the early stages of commercial application.

The immediate effect of such a combination achieving the commercially successful production of oil fuels from coal is its vital significance to the petroleum interests of the United States. Of equal importance, but of broader significance, are the future results of the changing national economies to be effected abroad by the possible displacement of the now tremendous imports of petroleum products, the utilization of coal in its liquified form in industry and the probable realignment of the European and international coal trade.

It is reported in Germany on reliable authority that the German Dye Trust's (Leunawerke) synthetic gasoline is to be put on the market before the end of the current year, although it had been expected that it would not be ready for sale to the public until early in 1928. Considerable current publicity is being given to the fact that the State Railways of Germany have placed this synthetic product in a preferential class in regard to freight rates which, of course, amounts to an indirect state subsidy to this infant industry of so much promise. While optimistic figures are quoted on the amounts of this "oil from coal" gasoline to be manufactured a more conservative opinion states that approximately 100,000 metric tons of gasoline is the maximum production possibility for the calendar year 1928.

Germany Imports More Oil

In this connection it is interesting to note that imports of 776,587 metric tons of liquid petroleum products by Germany in the first six months of 1927, from January to June, inclusive, (valued at 130,000,000 marks), permits the forecast that around 1,500,000 tons or more will be imported in the calendar year, against 1.2 million tons in 1926 and 1913, each, respectively. This level of import in the first six months of 1927 was more than in the entire calendar year of 1924, when 722,533 tons were received here. It is a striking commentary on the industrial recovery of Germany that its petroleum imports are at a record rate.

Furthermore, it is significant that, measured by imports, Germany is consuming at the rate of 300,000 tons annually more than last year, an observation that gains interest when compared with the estimate of only 100,000 tons of synthetic petroleum fractions to be produced in 1928 at the Leunawerke, in Central Germany, by hydrogenation of lignite, indicating that this much discussed operation will not affect imports of American petroleum, at first, and that it may take years before it makes any substantial inroad on the market.

Four Oil from Coal Processes

To refresh the minds of our readers, it should be noted that there are actually four "oil from coal" processes in existence: (1) The process of "Berginization," which consists of the hydrogenation of carbon and mineral oil at high temperatures and pressures, which method results in the formation of heavy oils and synthetic spirit in small quantities; (2) the I. G. (Dye Trust) process of hydrogenating coal, oil and pitch under pressures in the presence of catalyzers, which brings about a complete transformation of the original matter into bodies such as motor spirits and lubricating oils; (3) the I. G. process of hydrogenation whereby the oxides of carbon are made to combine with hydrogen under high pressures in the presence of catalyzers, the conditions being so varied as to obtain methyl alcohol, other alcohols of great purity or hydrocarbons of various kinds, including synthetic petrol; and (4) the Fisher-Tropsch process of hydrogenation, whereby the oxides of carbon are treated at low pressures in the presence of catalytic agents with the production of the aliphatic hydrocarbons of motor spirit up to the paraffins.

While Standard Oil of New Jersey and the German Dye Trusts have reached a patent-pooling agreement with reference to the Bergius process, common interests between the latter and Royal Dutch, in the International Bergin Co., of The Hague, have become more strained. It has been observed that, while Royal Dutch has lost much of its influence in the administrative council of International Bergin during the past year, Sir Henry Deterding, managing director of the Royal Dutch, has openly characterized the Bergin process of coal hydrogenation as uneconomical.

Royal Dutch Active

The Royal Dutch Co., through Sir Henry Deterding, presumably having pooled its former interest in the Bergin process, is now said to be fixed on research financed by American, British and Dutch capital, said to contemplate large-scale production by coal liquification of: (1) pure molecu'ar and highly active carbon from raw coal for use in the rubber, paint, sugar, oil and fats industries; (2) light liquid hydrocarbons (gasoline substitute); and (3) gaseous hydrocarbons of great heat value, as methane and homologues. This research is being conducted at the Institute of Technology in Dongen, Holland, by a scientist named Aarts. He has named his product "Carbonalpha."

"Carbonalpha" production is reported to possess the advantages of neither requiring metallic catalysts nor separate production of hydrogen under high pressure.

One commercial plant for production of "Carbonalpha" is said to be already in operation in Holland, while another is contemplated.

German Dye Trust Ahead

When some years ago Dr. Friedrich Bergius, father of the coal hydrogenation patents sought support, he applied to, and was welcomed by, Royal Dutch, which bought a half interest in International Bergin Co. (The Hague) controlling foreign patent rights. The other half shares were taken by a German consortium, later absorbed by the German Dye Trust. The German Dye Trust, in the meantime, has worked out its own process of coal (lignite) hydrogenation independently, but it may be presumed that it has calculated to unify all local "oil from coal" experimentation, if the danger did not actually exist of Bergius patent violation. It might be emphasized here that if local patriotic opinion is not overoptimistic, the German Dye Trust is so far advanced, if not further advanced, in this line of research than any other organization in the world today, and that any international agreements on "oil from coal" cannot ignore it.

International co-operation in "oil from coal" research seemed inevitable from the first. It will be recalled that in August, 1925, the German Dye Trust acquired Stinnes-owned shares of the old Stinnes-Riebeck Montan and Oel Werke, of Halle Saale, Stinnes-Riebeck mined and distilled lignite. Consequently, the German Dye Trust founded a commercial company, Deutsche Gasolin A. G., in connection with its buying into Stinnes-Riebeck. Then, the Standard Oil and Royal Dutch each acquired one-fourth shares of Deutsche Gasoline. The latter seems to be held in reserve to market the Dye Trust's synthetic gasoline, when it comes on the market next year. Doubt'ess, behind this maneuver, admitting Standard and Royal Dutch to participation in Deutsche Gasolin, both foreign companies having their own well organized distributing apparatus already in Germany, was the thought of reaching agreements with these two dominant world petroleum concerns to regulate competition when the Dye Trust's synthetic gasoline was finally put on the market. Such foresight may amply reward the German Dye Trust, for its synthetic gasoline, which went into "experimental production" at the Leunawerke on April 1, 1927, will enter the market about the beginning of 1928, when, from all appearances, the market will be oversaturated with oil as a result of American overproduction. This circumstance, of course, foresees continually falling prices.

There is some question as to what attitude Royal Dutch will adopt vis-a-vis synthetic gasoline. It is believed, however, that Royal Dutch still has about one-fourth interest in International Bergin, having ceded a quarter interest to the British chemical trust, when the latter elected to join its forces in its further development.

Economics of Situation

While much prominence has been given to the technical side of this subject and the international affiliations of the various companies concerned, little prominence has been given to the economics of the situation. For this reason, we believe it is worth while to reprint the data recently published by a colleague of Doctor Bergius in the technical supplement of the Frankfurter Zeitung, which is as follows:

"Based on accurate, careful calculations, and considering all necessary reservations, we reach the result that the production cost of one ton of the liquid product amounts to 90 marks. The products sell for from 140 to 190 marks, which is close to the price received for prepared coal. It costs about 8,000,000 marks to establish a plant with an annual capacity of 50,000 tons of oil. This cost price includes a 10 per cent depreciation, so that the profit on the investment is attractive, and the present petro'eum prices can decrease from 40 to 65 per cent before there is any danger of a loss.

Factory Costs and Drilling Expenses

"It also appears that the construction costs of a plant play only a relatively subordinate part, compared with the current expenses for raw material and manufacturing. But how does this compare with natural petroleum? The drilling and transportation expenses here are the greatest factors, while crude oil production, even from a rather good well, often necessitates pumping expenses, though they may be only proportionately small. When we consider drilling and the expenses connected therewith, a really unfavorable comparison must be made between drilling expenses and the factory construction costs, which at first sight appear to be so excessive. In 1925, 26,623 wells were drilled in the United States; the cost was $594,394,890. Of these, 6,734 wells, costing $171,760,295, did not produce. Thus, 18,889 producing wells were obtained, the cost of which, deducting that of the dry holes, amounted to $412,634,395 bbls. The average drilling cost for producing 1 bbl. of oil thus amounted to $138. Compared with this average, we have some extreme exceptions, as for instance, it costs $24 per barrel in the States of Louisiana and Arkansas, where wells are obtained with a large production of especially heavy oil, and not less than $979 per barrel in Pennsylvania, where the wells have only a small production of high grade oil.

"Hence, to secure a daily initial production of 50,000 tons, or about 350,000 bbl.s, the United States last year expended an average sum for drilling about 25 times more than the cost of one plant, with a large annual capacity, using the Bergin process.

Life of Wells

"But no comparison can be made with the figures, in this form, without considering other factors. So we can at least make a comparison, let us assume that a petroleum well is exhausted after 10 years (often a rather long length of life), and that a Bergin installation must be written off at the end of the same time. We may roughly estimate that a petroleum well loses 40 per cent of its production capacity yearly, from which we may draw the conclusion that the well, in the course of its 10 years of life (3,600 days) yields about 720 times its daily initial production, as shown in the table below, which, we repeat, contains rough estimates with no great consistency shown in the case of the different wells:

	Initial daily production (in bbls.) at beginning of the year.	Average daily production during the year.
1	10,000	8,000
2	6,000	4,800
3	3,600	2,880
4	2,160	1,728
5	1,296	1,037
6	778	623
7	467	374
8	280	224
9	168	135
10	101	80

This makes a daily total for each of the 10 years of 19,891 bbls.

"For the entire period of 3,600 days, the total was, therefore, 7,160,760, or about 7,200,000 bbls. One barrel of daily initial production thus corresponds to a total production per well of 720 bbls.

Bergin Process Compared

"By the use of the Bergin process, provided a plant has an annual capacity of 350,000 bbls., a total of 3,500,000 bbls. would be produced in 10 years, corresponding to the completion of a well with an initial production of 5,000 bbls. The drilling costs for 5,000 bbls. averaged $690,000 in 1925, or 2,900,000 reischsmarks, that is, one-third of the costs for constructing a Bergin plant of the same capacity. Of course, the current expenses of the plant play a more important part than in the case of crude oil production, so, to a certain extent, this plant corresponds not only to a drilling, but also to a refining operation. When the drilling costs are $24, the 5,000-bbl. initial production should amount to $120,000, or about 500,000 reichsmarks, and if the drilling expenses are $979, the result would be the fantastic sum of $4,895,000, or about 20,600,000 reichsmarks."

France Economizing

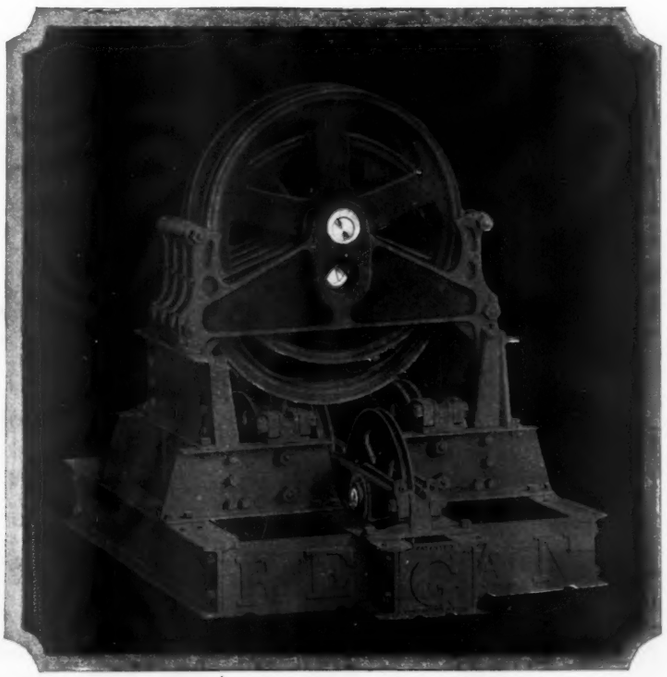
Although France is not over-rich in coal, being unable to satisfy her own needs in this commodity, it is the present plan to endeavor to organize its consumption with a stricter sense of economy and thus to be able to extract therefrom a synthetic petroleum and synthetic menthanel to replace gasoline. France

(Continued on Page 180)

Feature No. 8
Equalized Load on Derrick

Regan's *New* Crown Block

Write for pamphlet which describes the many features and illustrates the improved way of stringing up a Crown Block.

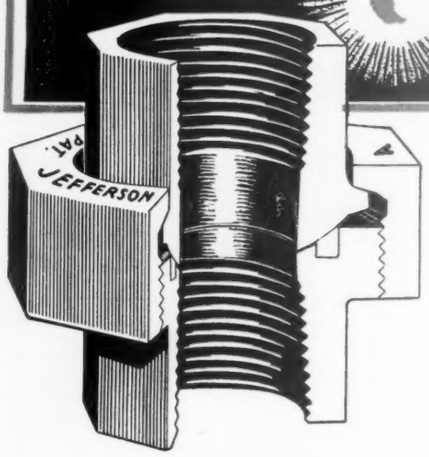


Construction of the Regan Crown Block provides equal distribution of the load to the four legs of the derrick. Regardless of how much load is carried on the Crown Block it is distributed equally, because of the alternate setting of Cross Beams, preventing strains upon any part of the derrick.

Watch our future advertisements for additional features.

Regan
Forge & Engineering Co.
San Pedro California

Houston, Texas
1521 Post Dispatch Bldg.
Oklahoma City, Okla.
531 W. Main St.
New York City
75 West St.
Wm. Braat, Manager
Maracaibo, Venezuela
Wm. Adams, c/o Amer. Consul
Odessa, Texas
Pampa, Texas



JEFFERSON UNIONS Are Preferred for TIGHTNESS and DURABILITY

In every part of the world where the petroleum industry penetrates, Jefferson Unions are used because of outstanding advantages in tightness and durability.

The perfected ground ball, brass-to-iron joints in Jefferson Unions are unfailingly tight, without gaskets. The air refined malleable iron of which Jefferson Unions are made is the most suitable material for durability and strength. For the seat ring the best grade of seamless brass tubing is used. The Jefferson construction, with liberal play between nut and swivel end, renders these unions exceptionally easy to apply.

Jefferson Unions and Flanges made in types and sizes to meet all requirements in the industry and are handled by oil jobbers everywhere.

JEFFERSON UNION COMPANY
Lexington, Mass., U. S. A.

Handled by All Leading Oil Industry Jobbers

JEFFERSON

American Operations in Foreign Fields

Activities of Leading Companies in South America. Year's Developments in Columbia, Peru and Venezuela

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Dec. 26.—Resumes of the operations abroad in 1927 of a number of the leading oil companies, furnished The Oil and Gas Journal especially for the World Issue, follows:

The Texas Company

In Mexico The Texas Company in 1927 drilled two dry holes, one gas well and four oil wells. Two wells are drilling and two or three others may be started before the end of the year. The company's oil production in Mexico for the year will amount to approximately 500,000 bbls.

In Venezuela the company holds acreage, some of which appears more promising as a result of near-by development.

In Santo Domingo the company is drilling at a depth of about 2,000 feet under contract made last March for about 1,500,000 acres.

The company has been taking options in Colombia, and has succeeded in rounding out a number of contracts aggregating about 2,000,000 acres, but whether these options will be exercised depends to some extent upon whether the pending petroleum law is passed and the final form that it takes.

International Petroleum Co., Ltd.

In Peru, the International Petroleum Co., Ltd., operates on the La Brea y Parinas estate, covering over 400,000 acres in northeastern Peru, and a number of concessions under the new petroleum law approximating 850,000 acres in the same general area.

From the commencement of operations until the close of 1926, the total number of wells drilling on the estate was 2,118, of which 1,322 were in production at December 31, last.

From January to October 31 of this year 112 additional wells have been completed of which 101 were producers. These producing wells had a total depth of 178,012 feet, the average being 1,664 feet. The average initial production was 188 bbls., but five wells had an initial flow of over 1,000 bbls. each, the largest recorded during the 10 months having a capacity of 1,900 bbls.

The 11 abandoned wells had a total depth of 34,854 feet or an average of 3,169 feet. These were mostly wildcats in outlying parts of the estate and were all "dry holes," no hole being lost on account of drilling trouble.

On the outside concessions four wells, with a total depth of 13,004 feet, have been abandoned and seven are still drilling.

Including all aperations the drilling footage for the first 10 months of the year was 246,034 feet, and at October 31, 46 wells were drilling, and a number of strings of tools were being employed in cleaning out and deepening old wells. As during the same period 20 producing wells were exhausted and abandoned, the total number of producing wells, at October 31, was 1,403.

Production for 1926 totaled 8,632,105 bbls. of which 6,729,820 bbls. were high cold test, and 1,902,285 bbls. low cold test crude. Owing to the prevailing situation in the oil industry, production has been substantially curtailed this year, and to November 30, 7,054,616 bbls. had been taken out. Of that amount 5,730,032 bbls. were high and 1,324,584 bbls. low cold test. The entire production for the year will approximate 8,000,000 bbls., of which 19 per cent will be low cold test.

The two gasoline plants, to November 30, had produced roughly 15,500,000 gallons and by the end of the year this production will exceed 17,000,000 gallons.

Tropical Oil Co.

In Colombia, the Tropical Oil Co., a subsidiary, is actively developing the De-Mares concession, which lies in the interior of Colombia, some 360 miles up the Magdalena River. This concession covers 1,319,344 acres and four separate structures are meanwhile being exploited on which, up to the end of 1926, 141 wells had been drilled. Of these, 92.1 per cent were successful, there being only five dry holes and seven wells abandoned on account of drilling trouble since the commencement of active operations in 1920.

During the first nine months of 1927 there have been 62 completions; with one exception these were successful wells, the only abandonment being a deep test on the Colorado structure lost on account of drilling trouble at 3,440 feet. Of the 61 producing wells brought in 2 were on the San Luis, 13 on the La Cira, and 46 on the Infantas structure.

The total depth of wells completed was 142,573 feet, giving an average depth of 2,331 feet. Twenty-four of the wells had an initial production of over 1,000 bbls. daily, the largest being No. 173 which came in with over 5,000 bbls. The total drilling footage to September 30 was 152,489 feet and at that date there were 23 wells drilling.

Production for 1926 was 6,443,540 bbls. From the beginning of the year to October 31, 1927, there has been produced 11,734,323 bbls., pointing to a total of over 14,000,000 bbls. for the year when completed.

The capacity of the field is in excess of the daily runs which amount to 55,000 bbls., but production is curtailed by the needs of the local refinery and the capacity of the Andian National pipe line from the field to the sea coast.

The production of casinghead gasoline is steadily increasing and will be in the neighborhood of 8,000,000 gallons for the present year.

Maracaibo Oil Exploration

The management of the Maracaibo Oil Exploration Corp. has continued the policy, determined upon some five years ago, of not pushing development of its holdings in Venezuela. Recent overproduction, both in Venezuela and the United States, has apparently justified this course.

The corporation owns outright some 300,000 acres, practically all located within the Maracaibo Basin. It also owns a one-third carried interest in approximately 67,000 acres, the acting and managing partner in this being the Standard Oil Co. of New Jersey. The corporation in addition holds a substantial royalty on some 108,000 acres owned and to be divided by the Gulf Oil Corp. This working interest and royalty are on lands around Lake Maracaibo.

The corporation expects to deal a large part, if not all, of its remaining 300,000 acres, on a cash bonus plus a royalty basis. Such dealings will be only with aggressive and substantial companies, and on lines that will insure a testing out and proper development of the properties when conditions in the industry justify the same. The corporation proposes to await the most advantageous time for starting the above program.

AMERICAN AIRPLANE PRODUCTION AT LEAST DOUBLED IN PRESENT YEAR

Production of airplanes in the United States in 1927 is expected to be at least double the output of 1926, with total of 1,186 planes, valued at $8,871,027, compared with 789 planes, valued at $6,673,659 in 1925.

Of the 1926 output, 808 planes were manufactured for commercial or private use, while, in addition, air service operators produced about 150 more planes, so that 958 planes were marketed for commercial or private use, compared with 328 taken by Army, Navy and Post Office, and 50 for export.

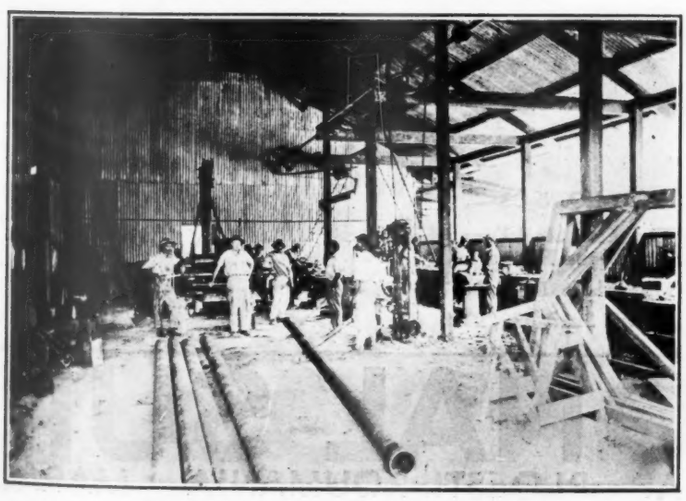
Leaders in aviation are of the opinion, says the Wall Street Journal, that this civil demand represents but the initial production of a new industry. Civil aeronautics since the war has been operating mainly on war supplies. The war was an important factor in the development of aviation in the United States in many ways. Many new aircraft factories were built and hundreds of aeronautical engineers and designers were taught. Some 10,000 pilots were taught to fly and nearly 17,000 planes were manufactured. Many thousands of artisans became skilled in aircraft production, and there was thus created the personnel and equipment to develop post-war aviation.

The significance of the current year in airplane manufacture is the fact that by the end of 1926 the war surplus of aircraft had become about exhausted, with the exception of some war surplus engines of low power. The demand for modern planes, coupled with diminution of war supplies, the development of better engines, the application of federal inspection and the widespread acknowledgement of the airplane in business life all promise an increase in production next year.

The total value of work done in 1926

(Continued on Page 183)

APEX (TRINIDAD) OILFIELDS, LTD.



Plant located at Fyzabad, Trinidad, B. W. I.

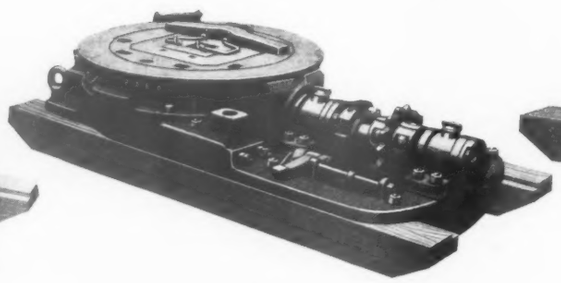
GENERAL VIEW, TRINIDAD FIELD

Showing property of Apex (Trinidad) Oilfields, Ltd., Fyzabad, Trinidad, B. W. I.

IDEAL ROTARY

UNIVERSAL (Make and Break)
All Steel Ball Bearing Rotary with Roller Bearing Pinion Shaft

Table Openings
18½—20″ 20—24″



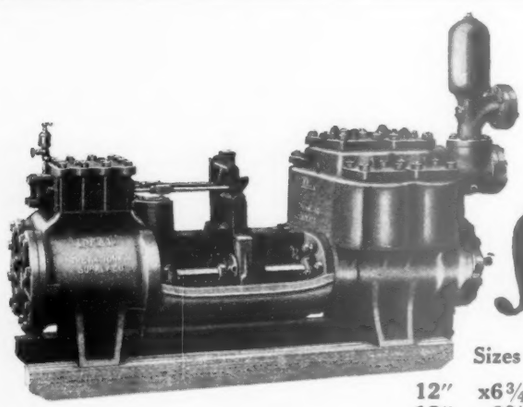
NO. 12
Heavy Duty All Steel Ball Bearing Rotary with Roller Bearing Pinion Shaft

Table Opening 25½″

NO. 7 (STEE

Table Openi
27½″

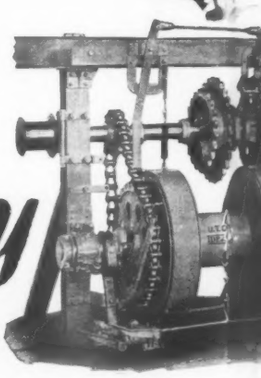
IDEAL
Rotar

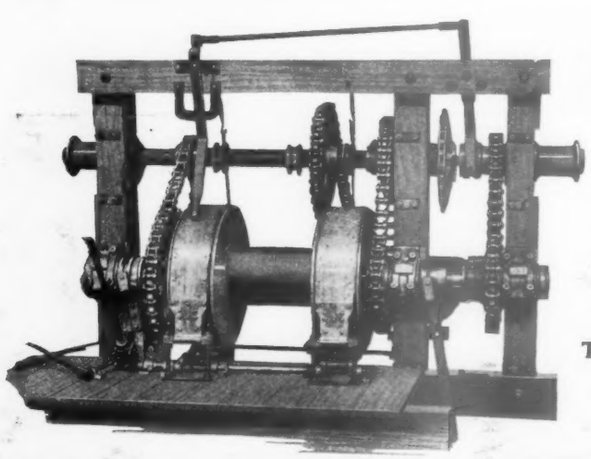


IDEAL
Slush Pumps

Sizes	Operating Pressures
12″ x6¾″x12″	125# Steam; 395# Water
12″ x6¾″x14″	125# Steam; 395# Water
14″ x7¼″x14″	175# Steam; 652# Water
14½″x7½″x18″	250# Steam; 1500# Water

NSCO
TRADE MARK





IDEAL Rotary

NO. 5-C3
Three Speed, Cast Steel Drum, Cast Iron Brake Flanges
Line Shaft 5⅞″x13′7″
Drum Shaft 5⅞″x12′

NO. 8-SD

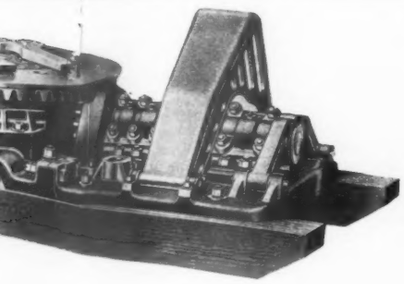
Steel Drum, Rolled For
Rims, Alloy Steel Drum
Steel Drum Shaft Boxes
Type), Self-Aligning Clu
Catheads (Manganese Ste

Line and Drum Shafts

THE NATIONAL SUPP

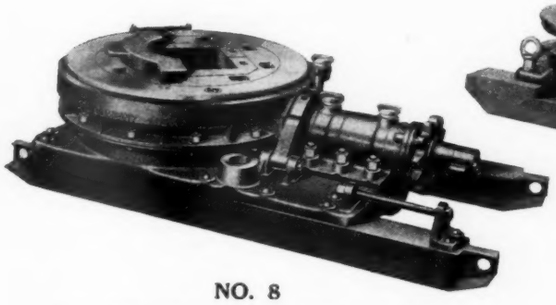
120 BROADWAY, NEW YORK, N.Y. U.S.A. PLOESTI, ROUMANIA MARACAIBO,

RY EQUIPMENT



NO. 7 STEEL

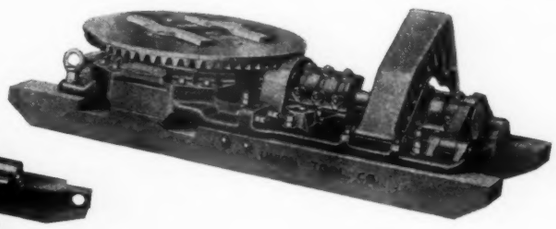
Table Opening
27½"



NO. 8

Export Special Alloy Steel Rotary Ball Bearing Table with Roller Bearing Pinion Shaft

Table Opening 20"



NO. 10

Standard, Steel Rotary Cone Bearing

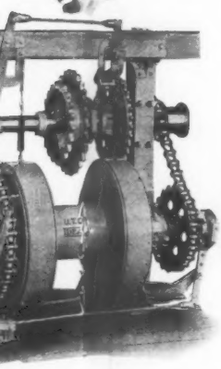
Table Opening 20"

DEAL

taries

NSCO

TRADE MARK



NO. 8-SD

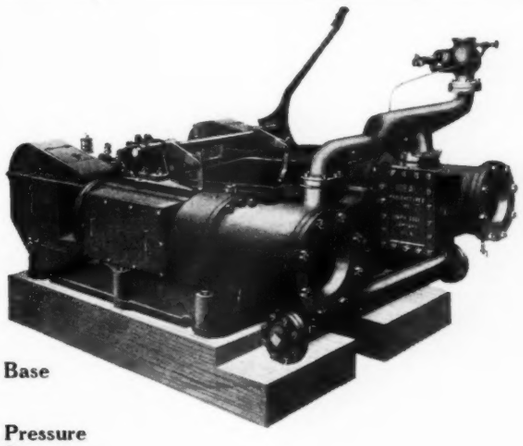
Rolled Forged Steel Brake
Steel Drum and Line Shafts,
Shaft Boxes (Ball and Socket
-Aligning Clutches, Sprockets,
langanese Steel).

Drum Shafts 5½"x9 9½"

DEAL

AJAX

Engines

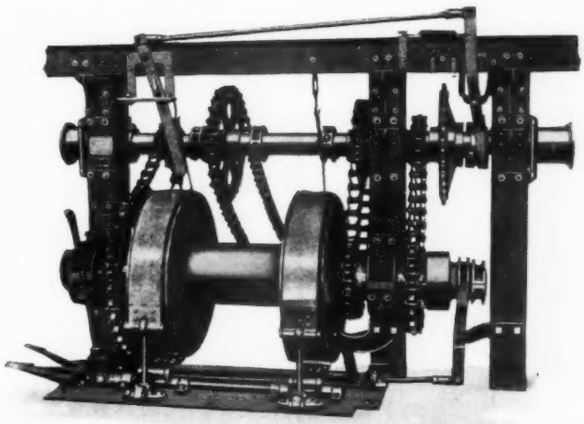


Enclosed Type, One Piece Base

Horse Powers

10x10____160 150# Steam Pressure
12x12____270 150# Steam Pressure

Draw-Works



NO. 7½-RB

Heavy Duty, Three Speed, Roller Bearing, Steel Drum with Forged Steel Brake Rims, Sprockets, Catheads and Clutches of Manganese Steel.

Line and Drum Shafts 7½"x10'6"

PPLY CORPORATION

CAIBO, VENEZUELA 165 QUEEN VICTORIA ST., LONDON E.C.4, ENGLAND

France Counting on Oil from Irak

Pipe Line Construction to Be Begun Early in New Year. Big Gusher Shut In Pending Providing of Transportation

Ever since the famous Agreement of San Remo, says the Paris correspondent of the Petroleum Times, London, the French journals have never lost an opportunity of mentioning that "France has 25 per cent of the petrol to come from Mosul." The proximity of the Anglo-Persian company's oil fields was always a strong argument in favor of the Mosul Field also being equally prolific. It has remained until the month of October to actually find sufficient oil in one of the drillings undertaken by the Turkish Petroleum Co. to obtain practical realization of the hopes entertained. And this proof comes just at the opportune moment when the French Parliament has set itself the serious task of proposing to take over the care of importing and distributing petroleum products in the country.

The story of how the 25 per cent share in the petroleum to be got out of Mesopotamia came to be definitely settled upon France, and how it has since been transferred to the Compagnie Francaise des Petroles—a company formed under government auspices—is now common history. The progress of the Turkish Petroleum Co.'s drillings in the neighborhood of Mosul has been followed very keenly, and the fact of one drilling alone giving out almost half the quantity that France needs per year has set all interested journals agog with glee. Much of the talk is confounded by the quantity of crude being taken for the quantity of "petrol essence," which is, of course, a slight mistake for ordinary conversation. But the fact of the new exploitations at Qaiyarah being 270 kilometers from the Persian frontier is noted with some satisfaction—being thus quite clear of encroaching upon the Anglo-Persian company's grounds—and the Baba-Gurgur well is at least 150 kilometers. This latter is the well which has been closed pending means of transport being provided. One prominent Paris daily regretted the loss to waste of the 50,000 tons of crude which were reported to have flowed out before the well could be stopped, and remarks: "The 50,000 tons in three days represent about the total production of France for a whole year, and amply shows the value of the concession (!) and the 25 per cent share of France in these fields will cover amply all our needs in petrol. In fact, the 15,000 tons per day given out by the Baba-Gurgur well alone would cover twice over the needs of France and its colonies in crude petroleum. In brief, it now appears that within 18 months or two years we shall have at our disposition all the crude petroleum necessary, and we cannot but be delighted at the perspective of being liberated from all dependence upon the foreigner.

"We are assured that the necessary 'pipe line' will be commenced by January 1, 1928, and a fleet of tankers of special construction will be necessary for conveyance to French ports. All these will require financing for a large amount. But there will be no difficulty on that account if the crude can find its natural outlet in France and refined under conditions which will assure its predominance over the petrols of other origin."

"We have quoted the above at some length," says the London Petroleum Times, "because it voices very nearly the conversation one hears frequently when petroleum matters are being discussed in France by French people. We see, for instance, the recurrence of the common error of taking the quantity of crude as representing petrol. This mistake is not confined to persons who have nothing to do with the oil business, but it is quite common with journalists and politicians. In addition it is remarkable that people should take the idea that because they have a 25 per cent interest in a company which seems to have a promising future, the holding of that 25 per cent of share capital carries with it the first and prior right of taking 25 per cent of the company's products.

"If France is going to take the crude

Irak gusher flowing. (By courtesy of the Turkish Petroleum Co., Ltd.)

she will have to first of all arrange for the necessary refining, either in France or elsewhere, and of sufficient capacity to take in all the crude arriving by tankers. Crude petroleum is not a product that can be easily discharged on to the quays of the port like bales of cotton.

"The complicated and confusing laws and regulations with regard to taxation upon imports of petroleum products—including crude—have been responsible for the backward position of France at the present time in regard to her petrol supplies, and if the amount so raised in taxes be transferred to other imports or other sources of production the result in the long run will not relieve the taxpayers."

Startling View

A rather startling view of the potentialities of the Irak Field appears in the London Oil News of December 3, which says:

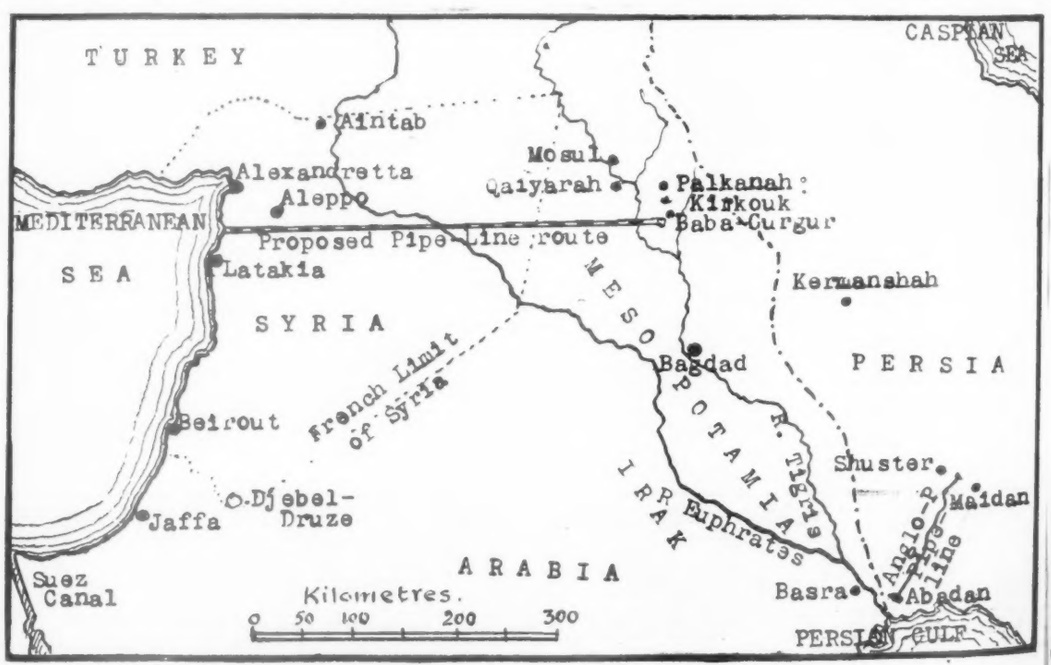
The first great gusher in Irak came in seven weeks ago. There has been time to learn new facts and to compare opinions, and also to consider carefully what this master well means to the oil world, and how many serious problems it raises. Let us begin by saying that the well itself was at least as large as any statement in print has made it. If we say 65,000 bbls. or 10,000 tons per day we shall not exaggerate. The oil is light, hence rich in petrol, the critical commodity of today's oil industry. Moreover, the oil field of which the well is the first unit is definitely proved. Nor will we stop here. We know that the field is of an order of magnitude which rivals the Musjid-i-Sulaiman Dome of Persia, if it does not even surpass it in richness. There is no conflict of geological evidence on this score. There have been, with regard to this Irak structure, two schools of geological theory, one of which expected the oil at shallow depth and the other at greater footage. One of them is justified; the other is not. But the difference in this particular makes all the more striking the unity of opinion that the great field has been proved. Any reasonable number of large flowing wells, of high-grade oil (with a small sulphur content) can be drilled on this fairly simple structure; and for some of them, at least, actual drilling time need not average more than six weeks.

The implications of this are tremendous, and to some may appear staggering. Here we have a field that probably eclipses, for importance of content and potential, anything known in the United States. The four large shareholders in the company that controls it will certainly not agree to keep it shut in indefinitely. Whither, then, is the oil to go? And what does its going mean to the world position? We start with the pipe line of the Turkish Petroleum Co. to the Mediterranean. That is as certain as anything in the future can be. But the field is big enough for two large pipe lines. We see no reason, for example, why one of the participating groups—say the American—should not become responsible for a pipe line to the Persian Gulf. The one pipe line will be of the greatest importance to European markets. The other pipe line—if decided upon—would be of the greatest importance to the Far East. Let us look at the latter first. The Far East production is represented by two sets of interests—the Burmah Oil Co. and the Royal Dutch and Shell group. Both operate old fields (broadly speaking) of moderate yield. Both market large quantities of products in the Far East. Here, now, comes the Irak oil (supplying a line to the Persian Gulf) and upsets the old balance completely, with vast output, easily drilled wells, high-grade oil. Would it not be fair to describe the change in the position in the Far East, under those conditions, as a revolution?

Nor would the case be less startling in Europe. Assuming a Mediterranean pipe line, the possible and probable supply of oil through this channel will dwarf Rumania into insignificance and to all intents and purposes settle the Russian oil problem for a generation. For the Irak oil is abundant above what present marketers ask and surely above what some of them think. It is producible at minimum expense, so that no cheap labor in Rumania or Russia, even, will avail against it; and it is made by nature for the petrol market. Is it too much to say that to Europe, also, the proving of the Irak Field will bring revolutionary conditions?

Persia constitutes, the above assumptions being granted, a problem in itself. In addition to the present Persian production of about 5,000,000 tons per annum, artificially restricted, the Anglo-Persian Oil Co. will have some 30 per cent of the Irak production as its own royalty, separate from its interest as a shareholder in the Turkish Petroleum

(Continued on Page 183)



Make it Metric this year

for

SURETY

General Office and Factory—Erie, Pennsylvania, U. S. A.

METRIC METAL WORKS

of the American Meter Company-Inc.

ERIE - PENNSYLVANIA - U-S-A

SAVE the waste

Refinery Rundown Tank Losses equal 1.8% storage losses of light products equal 2.5% according to— U. S. Bureau of Mines

The recovery of vapors from Rundown and Storage tanks eliminates waste and is profitable because of the high gravity gasoline content of the vapors.

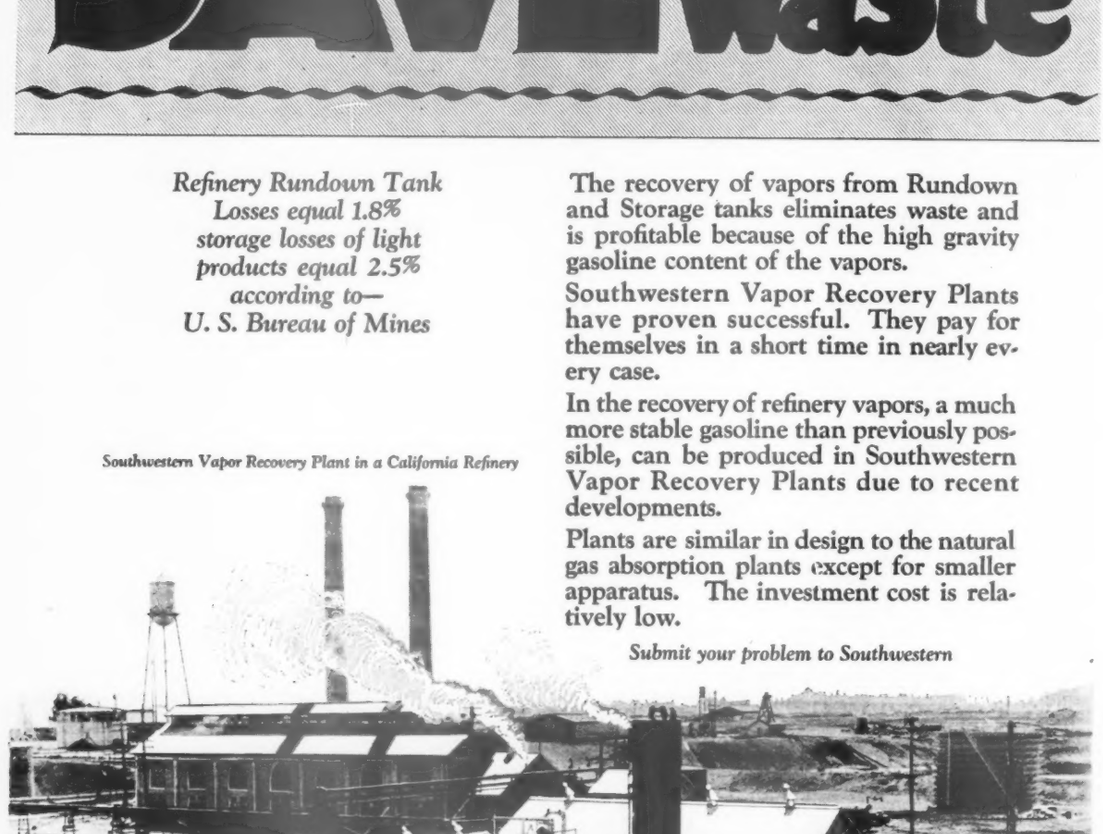
Southwestern Vapor Recovery Plants have proven successful. They pay for themselves in a short time in nearly every case.

In the recovery of refinery vapors, a much more stable gasoline than previously possible, can be produced in Southwestern Vapor Recovery Plants due to recent developments.

Plants are similar in design to the natural gas absorption plants except for smaller apparatus. The investment cost is relatively low.

Submit your problem to Southwestern

Southwestern Vapor Recovery Plant in a California Refinery



SOUTHWESTERN ENGINEERING CORP.

HOLLINGSWORTH BLDG.
Los Angeles, Calif.

Branch
Joplin National Bank Bldg.
Joplin, Missouri

and
90 WEST STREET NEW YORK CITY

Branches
Western Bldg., Amarillo, Tex.
Mayo Bldg., Tulsa, Okla.

Foreign Gasoline Demand and Prices

Bureau of Foreign and Domestic Commerce Compiles Reports of Great Value to Oil Industry. Retail Quotations

(Specially Contributed)

The following tabulation, prepared by the Bureau of Foreign and Domestic Commerce, shows the retail prices of gasoline in various countries throughout the world on various dates for the year 1927 as compiled by consular officers and foreign representatives of the Department of Commerce.

Attention is particularly invited to the fact that the prices quoted for the different countries should not be used for comparative purposes without taking into consideration the various factors which tend to make inequalities in prices. These factors include foreign exchange fluctuations, distance from sources of supply, quantity consumed, transportation costs, varying import duties, excise taxes, distributional and marketing costs, quality of product sold, and many others.

Prices in England Low

The Bureau of Foreign and Domestic Commerce has also made a number of interesting studies of gasoline consumption and prices in various foreign countries.

While in common with the political and other attacks directed at gasoline prices in the United States much criticism has been directed at these prices abroad, from typical reports on gasoline consumption and prices in England, Italy and Japan issued by the Department of Commerce, little justification is seen for such criticism.

Trade Commissioner H. S. Fox, in London, reports:

"An analysis of the available data regarding gasoline costs in the United Kingdom appears to indicate that these costs, both absolutely and relatively, are remarkably low. There are a number of different bases upon which a conclusion might be reached, as to the relative level of gasoline prices or costs, but perhaps the most indicative in many respects is the price trend over a period of years as compared with other commodities.

"On this basis the costs of gasoline to the British consumer at present shows in a rather remarkable manner how the consumer is benefiting by the various economics and improved methods of refining, as well as better distributing and marketing methods which have been introduced in the oil industry since before the war, and in spite of the various reports as to the possibility of early depletion of world oil supplies. While the general level of commodity prices in the United Kingdom is now very materially above prewar, the prices of petrol (gasoline) show a very material decline. According to a series of index numbers compiled by the "Economist," the average price level at the end of December, 1926, for several groups of important commodities stood at 155, as compared with 100 at the end of July, 1914. In contrast to this the price of gasoline at the end of December, 1926, stood at 76 as compared with 100 at the end of July, 1914.

"A comparison of gasoline prices with the retail prices of various items, such as food, rent, clothing, etc., as compiled by the Ministry of Labor in its cost-of-living index, shows the same trend. On the basis of these figures, the average price level in the United Kingdom for all items included in the cost-of-living index on December 1, 1926, stood at 79 per cent above the corresponding level in July, 1914. Compared with the general level, gasoline prices showed a decrease as of the first of December, 1926, of 21 per cent from the corresponding cost in July, 1914. A corresponding relatively low price for gasoline may be seen during the entire period since before the war."

Prices in Italy

The following comparative prices paid in Italy for gasoline in recent years have been compiled from data of the Societa Italo-Americana del Petrolio (Standard Oil Co. of New Jersey). Discrepancies between these and the official figures are attributed to disorganization during the early postwar years. The lira had an average exchange rate of $0.04294 in 1921, $0.04756 in 1922, $0.04602 in 1923, $0.4358 in 1924, $0.0398 in 1925 and $0.038894 in 1926.

Year	Gasoline Consumed in Italy Met. Tons	Average price per liter f.o.b. Coast Deposit Lire	Av. price per 100 kilos f.o.b. Coast Deposit Lire	Government Provincial Municipal Revenue per 100 kilos Lire	Sales Tax per 100 kilos Lire
1921	100,983	3.11	425.50	182.05	60.00
1922	127,913	2.82	388.30	165.35	60.00
1923	147,638	2.76	379.95	166.80	60.00
1924	156,450	2.54	349.95	172.90	60.00
1925	183,948	2.71	374.05	169.05	47.50
1926	219,451	2.82	388.25	156.85	30.00

Japan's Demand Grows

In Japan the approximate gasoline consumption during the past eight years is given in the table below:

Year	Indicated Consumption Gallons
1918	9,775,773
1919	9,735,099
1920	13,609,122
1921	12,546,472
1922	18,763,150
1923	20,128,850
1924	29,454,946
1925	35,664,328
1926	35,664,328

This sharp increase in consumption is in direct relation to the growing number of automobiles in this country, there having been an increase from 13,000 vehicles in 1922 to more than 44,000 at the end of 1926. It is also partly due to the increased use of internal combustion engines in industry and agriculture.

In order to make a graphic comparison of the prices of gasoline and the other commodities selected the monthly index numbers have been averaged for each year as follows:

INDEX NUMBERS GASOLINE AND OTHER COMMODITIES

(Yearly averages basis 1918—100)

	1918	1919	1920	1921	1922	1923	1924	1925	1926
Gasoline	100.0	115.7	109.5	103.8	89.3	67.7	69.3	69.1	62.4
Raw silk	100.0	142.5	120.5	104.8	130.4	145.3	125.1	135.6	115.5
Rice	100.0	140.5	136.1	93.9	107.2	100.0	117.7	127.2	115.5
Cotton yarns	100.0	142.4	114.8	68.9	66.1	69.4	91.3	89.5	65.2
Coal	100.0	103.9	109.1	80.4	74.7	74.1	73.1	66.2	65.7

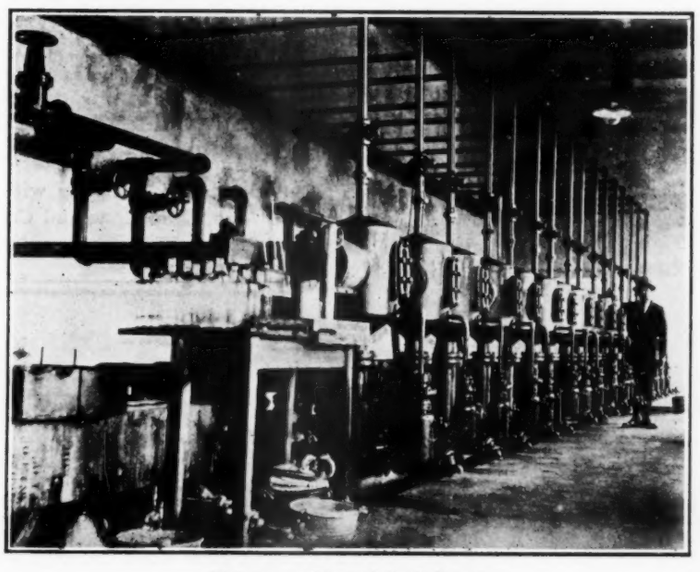
1927 WORLD RETAIL GASOLINE PRICES

(Prices in United States Cents per Gallon)

Country and City—	July 30	April 30	Feb. 28	Jan. 1
Angola, Loanda	41	44	43	54
Arabia, Aden	43	43	43	43
Argentina, Buenos Aires	38	44	44	42
Australia, Sydney	42	42	42	42
Austria, Vienna	29	29	29	30
Azores, Hor.a, Fayal	48	48	50	50
Belgium, Antwerp	27	27	27	27
Brussels	32	32	32	32
Bolivia, La Paz	61	62	62	62
Brazil, Rio de Janeiro	39	47	50	44
British East Africa, Nairobi, Kenya	64	79	79	70
British South Africa, Johannesburg	61	68	71	70
Durban	51	51	54	53
Cape Town	51	51	54	53
Bulgaria, Sofia	35	35	35	38
Burma, Rangoon	53	53	53	53
Canada*, Toronto	19	28	28	28
Montreal	20	28	28	28
Winnipeg	23	31	31	31
Canary Islands†, Teneriffe	32	32	42	56
Ceylon, Colombo	45	45	45	45
Chile, Santiago	39	44	44	44
China, Shanghai	42	42	42	42
Hankow	58	50	50	50
Peking	38	38	38	38
Chosen, Seoul	41	45	..	..
Colombia, Bogota	70	70	70	69
Costa Rica, San Jose	50	50	50	50
Cuba, Habana	36	36	32	32
Czechoslovakia, Prague	31	31	31	31
Danzig	27	27	27	27
Denmark, Copenhagen	27	27	27	27
Dominican Republic, Santo Domingo	40	43	45	45
Netherlands West Indies, Curacao	31	31	..	..
Ecuador, Guayaquil	52	52	52	41
Egypt, Alexandria	36	36	36	36
Es.onia	29	29	29	29
Federated Malay States, Singapore	44	44	44	44
Penang	42	42	42	42
Finland, Helsinfors	31	31	32	33
France, Paris	32	32	32	32
French West Indies, Martinique	44	44	44	44
Germany, Berlin	28	28	28	28
Greece, Athens	45	45	48	47
Guatemala, Guatemala City	70	70	67	67
Guiana, British, Georgetown	42	42	42	..
Haiti, Port au Prince	40	40	40	45
Honduras, Tegucigalpa	62	57	57	59
Hungary, Budapest	31	33	33	37
India, Bombay	38	31	..	..
Calcu.ta	..	..	36	44
Irak, Bagdad	33	59	59	49
Irish Free State, Dublin	25	29	29	28
Italy, Rome	53	53	53	43
Japan, all main centers	37	40	37	37
Java, Batavia	42	44	44	..
Korea (Chosen), Seoul	41	45	45	52
Liberia, Monrovia	38	38	38	39
Latvia, Riga	42	50	50	50
Lithuania, Kovno	28	30	30	..
Madagascar, Tananarive	78	86	79	79
Maderia, Funchal	47	45	45	46
Morocco, Tangier	47	62	..	..
Mexico, Mexico City	26	38	38	38
Torreon	39	39	39	39
Netherlands, The Hague	23	24	27	29
Newfoundland, St. John's	30	32	32	28
Nicaragua, Bluefields	44	48	48	48
Palestine, Jerusalem	50	53	58	58
Panama, Panama City	25	25	25	30
Persia, Teheran	68	82	71	71
Peru, Lima	25	25	29	30
Philippine Islands*, Manila	36	45	45	45
Poland, Warsaw	34	32	32	32
Porto Rica, San Juan	19	26	28	27
Portuguese East Africa, Lourenco Marques	61	..	..	..
Rumania, Bucharest	22	22	22	14
Siam, Bangkok	43	47	47	..
Society Islands, Tahiti	30	47	57	40
Spain, Madrid	47	47	47	47
Seville	32	..	..	..
Bilbao	50	50	50	50
Sweden, Stockholm	34	33	43	38
Switzerland, Zurich	33	37	39	41
Syria, Beirut	42	42	30	30
Tunisia, Tunis	30	30	30	24
Turkey, Constantinople	36	35	41	41
United Kingdom, London	23	26	26	28
Uruguay, Montevideo	32	43	43	43
Venezuela, Caracas	49	49	49	49
Western Samoa, Apia	49	43	55	59
Yugoslavia, Belgrade	52	49	47	54

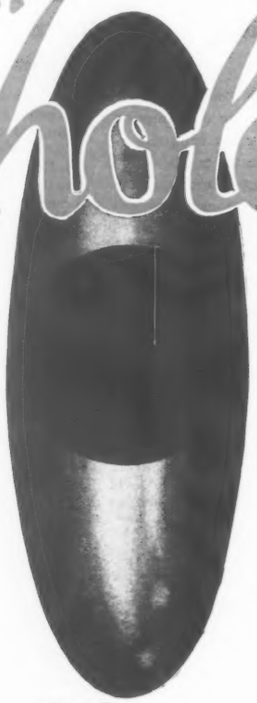
*Price exclusive of provencial taxes. †Price exclusive of tax.

INTERIOR TELEAJEN REFINERY, RUMANIA



Vacuum stills and look boxes.

A "hole" Lot of Difference



The Most Important and Sensational Screen Development Since the Patenting of the Original Layne Keystone Wire Wrapped Screen

On these two pages is illustrated a most important development in oil and water well screen design—one of unusual interest and benefit to the industry.

The Layne Patent Keystone Wire-Wrapped Screen, the most widely and extensively used screen in the world today, has been still further improved by this latest feature,

A much enlarged inlet area without the weakening of the screen.

Our engineers, with their years of practical experience in solving screen problems, thought this idea of the milled grooved holes a good one—leading oil companies have just completed tests that have proven conclusively that the new improved Layne screen still gives greater production, and are most enthusiastic about its performance.

If you will furnish us a sample of the type of sand in which you expect to set screen we will furnish you with complete information on the size and type of screen best fitted to solve your screening problem.

Layne Ratchet Packers can be depended upon to deliver maximum efficiency without danger of bursting the casing. Also, Lead Cone and Canvas Packers, Double Seal Packers, Screw-off Packers, and Pin Packers.

LAYNE and BO

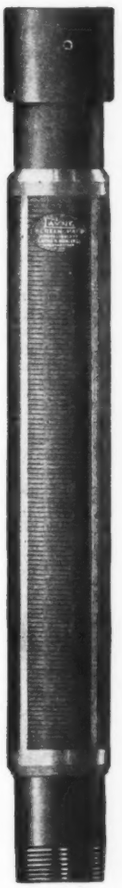
HOUSTON, TE

The Layne New York Co., 30 Church St., New York

The Layne & Bowler Corp., os Ang

Makes a Well Do All Its "Stuff"

Design fully protected by Patents



View of Complete Layne Screen

Look at the Difference

Observe the maximum inlet area provided by the oblong grooved holes milled in the pipe. Notice that the fluid now has to flow but a short distance before passing through the screen and that the sloped surface of the hole can receive oil directly through the openings from between ten or twelve wires.

Since ten to twelve wraps of wire pass over each groove, excessive production over the drilled holes is avoided, as a uniform feed of the fluid through the outer openings of the screen is continually fed through the drilled holes from the entire surface of the screen. This avoids the possibility of "sand cutting," which is occasioned by excessive velocity of fluid entering at any one point.

Grooves are so spaced that the drainage distance between the Keystone Wires is very short eliminating the possibility of openings becoming clogged with mud or sand.

These milled grooves do not weaken the screen body either for tensile strength or collapsing strength.

In every other respect the famous Layne Keystone Wire-Wrapped Screen remains the same with its reputation of safe dependable service, giving maximum production at lowest cost, a reputation builded by a quarter of a century's specialization in the manufacture of screens.

We maintain excellent facilities for exporting our products to foreign fields. Many of our products are already being used in quantity and with complete satisfaction in foreign countries. Write for complete information on our products and services.

BOWLER CO.

ON, TEXAS

r Corp., Los Angeles, California

Vickers, Limited, London, England

Auto Registration in Foreign Lands

Five Countries With 11 Per Cent of Population Use 90 Per Cent of World's Motor Vehicles. Changes in Year

(Specially Contributed)

The world position of the American automobile is not surprising when it is considered that those motor cars in use in Continental United States and Canada, at the beginning of this year, represented about 87 per cent of the world total. In fact, the United States and Canadian registrations were almost five times as extensive as those of the rest of the world combined.

The United States is still by far the most extensively populated with automobiles and also has the greatest per capita ownership. The United States, the United Kingdom, France and Canada, representing less than 11 per cent of the world's population, accounted for almost 90 per cent of the automobiles in world use on January 1, 1927. Continental United States alone, with but 6 per cent of the world population, had 80 per cent of the automobiles.

Ratio to Population

The estimated number of inhabitants to each automobile in the 25 countries having most of this type of vehicle within their borders on January 1, 1927, is indicated in the table that follows:

	Persons per Automobile
United States	5
United Kingdom	43
France	46
Canada	11
Australia	17
Germany	196
Argentina	45
Italy	294
Spain	138
New Zealand	12
Sweden	61
Belgium	81
India	3,893
Brazil	444
Denmark	43
Union of South Africa	99
Netherlands	107
Switzerland	76
Mexico	307
Dutch East Indies	1,085
Japan	1,398
Cuba	94
Irish Free State	83
Hawaii	11
Norway	926

Countries Change Positions

More than half of the countries in this group of 25 changed their positions during the year 1926. Germany moved down from fifth to sixth place while Australia, formerly sixth, advanced to fifth position. New Zealand fell back one place, and Belgium gave way two places. Spain advanced from twelfth to tenth place. The Union of South Africa went from thirteenth to sixteenth. India bettered its position by one, Brazil by two, while Mexico and the Dutch East Indies each dropped to one place lower. Switzerland went from twentieth to eighteenth place. Cuba and Japan changed positions, to the latter's advantage.

On January 1, 1927, there were estimated to be over 25,268,584 passenger cars, trucks and buses in circulation throughout the world that were manufactured either in the United States or in Canadian automobile plants or were assembled in foreign branches of these American plants. This represents over 95 per cent of those cars in world use whose nationalities were known. Of all the passenger cars, 21,976,557, or about 97 per cent, were American; 124,332, or over 73 per cent, of the buses employed American chassis; 3,167,695, or over 86 per cent, of the trucks were American built.

The latest official census of world automobile registration prepared by the Department of Commerce, as of January 1, shows that there were approximately 27,650,267 automobiles in use throughout the world on that date. This total includes 23,518,928 passenger cars, 194,374 buses, and 3,936,965 trucks but does not include 1,726,241 motorcycles.

Of the total the United States accounts for 22,137,334, or about 80 per cent. The rest of the world, outside of Continental United States, is now using 5,512,933 automobiles.

As of January 1, 1924, there were 15,281,295 passenger cars, trucks and buses in the United States. By January 1, 1927, this total had increased to 22,137,334—an advance of 6,856,093, or 45 per cent, during the three-year period. Three years ago there were about 2,931,407 such vehicles in the outside world. On January 1, 1927, these had expanded to 5,512,933—an increase of 2,581,526 units, or about 88 per cent, in registrations during the period.

In the United States we have reached that point in the development of our local automobile market where more than 50 per cent of the units sold are to replace those retired from service. This accounts for the fact that, although our sales in the United States continue to increase, the tendency is toward a lower percentage of registration advance from year to year.

The importance of this fact is commonly ignored in the petroleum industry which is inclined to base estimates for future gasoline and lubricating oil consumption on a direct ratio to automobile registration. Five years ago the average automobile secured a mileage in the neighborhood of 9 miles per gallon of gasoline, whereas today the average is probably nearer 16 miles per gallon with the newer types of light bodies in combination with small, high-compression motors commonly securing mileage of 25 to 30 miles per gallon of gasoline. Thus it is easily seen, in view of these facts, that increased gasoline consumption must come in progressively increasing proportions from those automobiles now in service rather than by new automobiles sold to new owners.

Peak Still in Future

Since in the aggregate the newer developed markets so influence our automobile export sales, the peak in percentage increase in registrations in the outside world is still far in the future. In proof of this, it is pointed out that automobile registrations in the United States increased only about 10 per cent last year, whereas registrations in the rest of the world went ahead about 20 per cent.

The year 1927 saw 2,086,058 four-wheeled motor vehicles added in the United States, while in the rest of the world the additions totaled only 977,960.

Progress Made in World Use

The chart appearing with this text clearly illustrates the rapidity with which the world, during the past few years, has increased its use of motor transportation.

At the beginning of 1924 it was estimated that there were about 18,212,702 motor vehicles, not including motor cycles, in world use. During the following years, 9,437,565 such vehicles were added, this representing a 52 per cent expansion. During the same period the number of passenger cars increased about 48 per cent, advancing from 15,868,155 to 23,518,928, or by 7,650,773 units. But most interesting of all and very indicative of the trend during recent years is the increase in world use of trucks and buses. On January 1, 1927, there were about 2,344,547 of these commercial vehicles in use throughout the world to supplement rail, inland waterway and animal (man and beast) methods of transporting people and merchandise. The total of these types of carriers in use on January 1, 1927, was estimated to be 4,131,339. In three years the world had made a place in its basic transportation system for 1,786,792 more trucks and buses, this representing an increase of about 76 per cent.

Distribution by Continents

In the table that follows, indicating the distribution of motor vehicles (not including motorcycles) by major continental subdivisions, it will be observed that throughout the four years covered the relative position of the continents remain the same—the American Continent first, then the countries of Europe (including the United Kingdom), then Oceania, Asia, and last Africa. The trend of passenger car, as also of truck and bus, registrations in the respective continents can easily be traced by studying this compilation:

WORLD REGISTRATION OF AUTOMOBILES (PASSENGER CARS, TRUCKS AND BUSES), BY CONTINENTS, AS OF JANUARY 1

	1924		1925	
Continent—	Passenger Cars	Trucks and Buses	Passenger Cars	Trucks and Buses
America	14,172,499	1,903,432	16,471,187	2,268,322
Africa	38,760	6,850	91,590	12,819
Asia	122,245	16,514	154,399	29,332
Europe	1,362,656	408,674	1,611,118	535,560
Oceania	171,995	9,077	250,456	31,188
Total	15,868,155	2,344,547	18,578,750	2,877,221

	1926		1927	
Continent—	Passenger Cars	Trucks and Buses	Passenger Cars	Trucks and Buses
America	18,525,334	2,643,857	20,460,240	3,025,932
Africa	123,293	21,228	156,416	32,596
Asia	184,087	44,603	226,765	61,502
Europe	1,656,296	854,800	2,244,686	920,053
Oceania	348,136	71,995	430,821	91,262
Total	20,837,146	3,636,483	23,518,928	4,131,339

Ratio of Exports to Production

Perhaps the most important fact brought out in the study of 1927 automotive export statistics of the United States is the constantly enlarging percentage of our domestic automobile production going into foreign markets. In August, 1926, the ration of exports to production was 4.2 per cent for passenger cars and 9.9. 4.2 per cent for passenger cars and 9.9 per cent for trucks and buses, the average for both classes amounting to only 4.8 per cent of production. In August of the present year these figures were 8.6 per cent for passenger cars and 27.6 per cent for trucks and buses, the two classes combined standing at 10.6 per cent. That this is representative is shown by the fact that for the eight-month period passenger cars stood at 8.9 per cent, trucks and buses at 23.5 per cent, and the two combined at 10.6 per cent of total production exported. By way of comparison, England in 1926 exported 16.7 per cent, France 30 per cent, Italy 53 per cent, and Germany 3 per cent of their total production.

WORLD CENSUS OF MOTOR VEHICLES ON JANUARY 1, 1927

(Compiled by H. O. Smith, Chief, Automotive Division, Bureau of Foreign and Domestic Commerce)

Total World Registration January 1, 1926 and 1927.

	Passenger Cars	Buses	Trucks	Total Automobiles	Motor Cycles
1926	20,837,146	172,617	3,463,856	24,589,249	1,435,147
1927	23,518,928	194,374	3,936,965	27,650,267	1,726,241

Country—	Passenger Cars	Buses	Trucks	Total Automobiles	Motor Cycles
†Abyssinia	100	.....	.....	100	.....
†Aden	510	90	35	635	120
**Afghanistan	85	.....	80	165	2
‡Alaska	1,153	25	556	1,734	2
†Albania	353	.....	80	433	.....
§Algeria	24,242	721	2,888	27,851	793
‡American Samoa	20	4	5	29	1
†Angola	700	2	750	1,452	100
†Argentina	205,000	1,110	16,500	222,610	2,971
‡Australia	304,255	893	60,503	365,651	70,228
§Austria	12,400	400	7,800	20,600	21,300
‡Azores 2	491	25	7	523	18
‡Bahamas	649	2	227	878	5
†Bahrein	130	.....	.....	130	.....
‡Barbados	1,054	76	81	1,211	151
§Belgian Congo	825	.....	750	1,575	550
†Belgium	53,270	1,000	43,000	97,270	30,000
†Bolivia	1,350	20	650	2,020	100
†Brazil	60,800	300	20,000	81,100	1,500
†British East Africa	5,500	.....	2,000	7,500	3,500
‡British Guiana	986	47	68	1,101	136
‡British Honduras	128	.....	34	162	1
**British North Borneo	55	.....	15	70	10
**British Oceania, other	70	.....	20	90	25
§British Samoa	151	8	85	244	9
§British West Africa	3,232	.....	6,003	9,235	3,407
†British Somaliland	60	9	10	79	20
‡British S. W. Africa	630	12	88	730	100
§Bulgaria	1,700	.....	800	2,500	400
‡Canada	734,848	6,633	87,437	828,918	7,876
§Canary Islands	2,906	125	1,091	4,122	88
§Ceylon	8,599	2,008	1,528	12,135	2,812
§Chile	14,400	.....	3,600	18,000	150
†China	16,012	1,015	1,901	18,928	1,681
†Chosen (Korea)	1,208	.....	160	1,368	125
†Colombia	5,425	181	2,310	7,916	168
**Cook Island	45	.....	30	75	5
‡Costa Rica	659	64	174	897	87
§Cuba	28,303	1,053	8,682	38,038	244
‡Cyprus	723	1	141	865	238
†Czechoslovakia	20,000	600	6,500	27,100	18,000
‡Danzig	1,076	72	426	1,574	664
‡Denmark	61,813	850	17,024	79,687	20,000
‡Dominica	26	.....	4	30	.....
‡Dominican Republic	2,275	6	549	2,830	37
§Dutch East Indies	41,500	350	5,150	47,000	7,850
†Dutch Guiana	110	.....	10	120	40
†Dutch West Indies	585	3	169	757	17
‡Ecuador	832	17	310	1,159	21
§Egypt	14,842	1,047	1,851	17,740	3,500
‡Eritrea	95	.....	6	101	12
‡Estonia	598	76	318	992	232
†Faroe Islands	12	.....	.....	12	.....
‡Fiji Islands	619	4	114	737	107
†Finland	12,094	1,437	4,207	17,738	4,451
†France	545,000	26,000	280,000	891,000	155,000
‡French Guiana	66	.....	34	100	6
‡French Indio-China	7,479	.....	1,533	9,012	1,288
†French Somaliland	55	2	4	61	8
§French West Africa	2,101	.....	1,719	3,820	250
§Germany	218,000	6,000	95,000	319,000	287,000
‡Gibraltar	466	54	57	577	67

(Continued on Page 180)

AXELSON

Axelson Machine Co.
Sucker Rods, Pull Rods, Plunger Working Barrels (Pumps, Etc.)

Beaumont Iron Works Co.
Dreadnaught Rotary Equipment, Water-Cooled Draw Works, Pumping Hoists, Traveling Blocks, Etc.

Carbic Manufacturing Co.
Acetylene Gas Generators and Welding Equipment

Donovan Boiler Works
Oil Country Boilers and Tanks

Frick-Reid Service Belting
Rubber Covered and Friction Surface

Jensen Bros. Mfg. Co.
Pumping Jacks

National Transit Pump and Machine Co.
Power and Steam Pumps

J. P. Ratigan
Grips, Clamps, Beam Hangers

Joseph Reid Gas Engine Co.
Gas and Oil Engines, two and four-cycle, Band Wheel and Direct Drive Pumping Powers

Rossendale-Reddaway Co.
"Camel Hair" Belting, Belt Clamps

Whitlock Cordage Co.
Manila Cordage, Including Frick-Reid Manila Bull Ropes —same quality for ten years.

Lapweld and Seamless Tubular Goods

Walworth Company
Valves, Fittings and Tools for Steam, Water, Gas, Oil and Air.

Engineering Crews
For the installation of Pumping Powers and related equipment.

A.P.I.

The Axelson Plants are now in production on A.P.I. Specification Rods embodying the

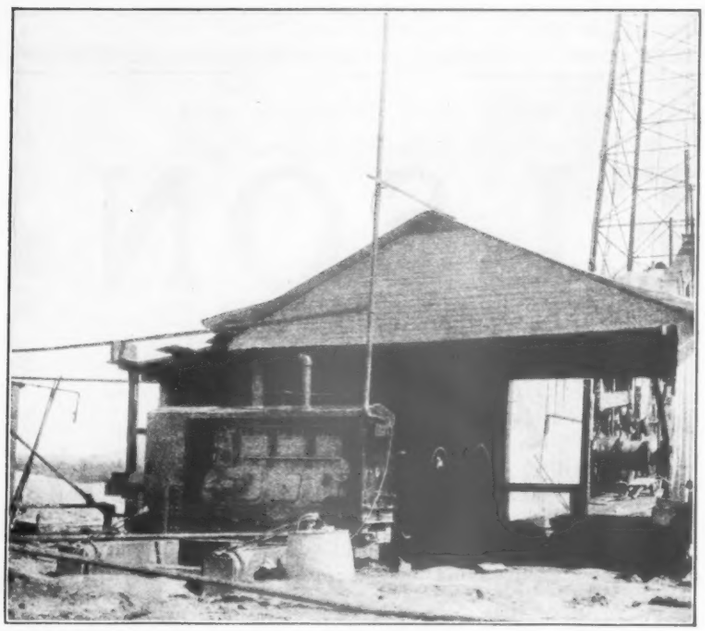
4th Dimension

into which enter the extraordinary facilities of the manufacturers and our own distributing and engineering resources. There is no economical substitute for the quality of Axelson.

Rods

FRICK REID SUPPLY COMPANY

Tulsa, Okla. Pittsburgh, Pa.
West of the Mississippi, Stores Everywhere
East of the Mississippi, The Frick & Lindsay Co.



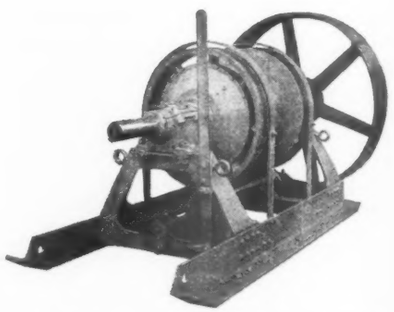
Pulling Tools at the Rate of 350 Feet Per Minute

The Magnolia Petroleum Company at Chalk No. 1 well, southeast of Big Springs in Howard County, Texas, pulled the entire string of tools from a depth of 575 feet in less than 1½ minutes. That is clearing the hole of tools at the rate of 350 feet per minute. The bandwheel speed was 30% faster than the bandwheel speed obtainable from the average steam engine. Yet it was only a few per cent greater than that usually obtained under normal operations from a Climax 6-cylinder engine. Climax high-speed drilling units can give you the kind of speed that increases your drilling capacity per tower—the kind that can give you a greater margin of profit per hole. We have a wealth of information on high-speed gasoline engine drilling—write us.

CLIMAX ENGINEERING COMPANY, 76 W. 18th Ave., Clinton, Iowa

CLIMAX Trade Mark Reg. U. S. Pat. Off.

High-Speed Drilling Units



This is the new Climax Reverse Clutch built especially for handling the steady flow of power from the Climax "Paymaster" 6-cylinder engine. It has five distinct operating motions all controlled by one simple lever. It is light in weight as is the Climax 6-cylinder engine, and it's equally easy to move.

DISTRIBUTED BY

THE NATIONAL SUPPLY COMPANIES

NSCO

Close Up of Persian Oil Industry

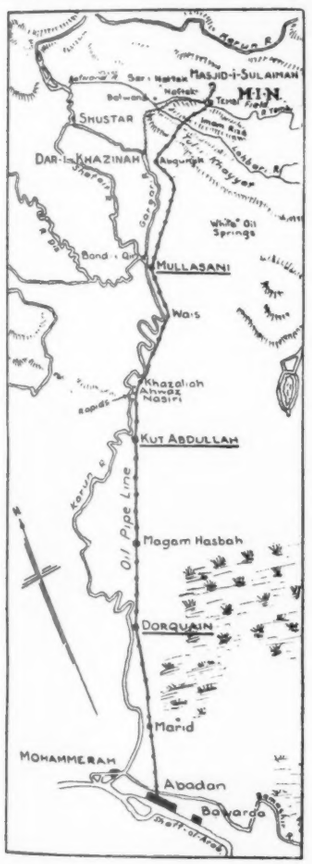
Anglo-Persian Oil Co. Pamphlet Describes Its Operations in World-Famous Field

The Anglo-Persian Oil Co. has brought out "The Persian Oil Industry," an illustrated 28-page pamphlet describing its Persian operations from which the following extracts are taken:

Two of the features which distinguish Masjid-i-Sulaiman from other famous oil deposits, such as those discovered in the United States, in Mexico, and in Russia, are the steadiness of its production and the high and consistent pressures of gas—features which are, of course, intimately connected. This steadiness of production and pressure is due largely to the oil being contained in porous rock, rather than in oil sands, as in most other fields, the flow naturally being more steady owing to the comparative stability of the container. But it is also due to the manner in which the field has been developed and organized by the company.

Scientific Production

The visitor to the Persian fields who is familiar with oil exploitation in other parts of the world is apt to be struck by the comparative fewness of the derricks, the wide spaces which separate them, and the absence of any ocular evi-



dence of oil, except in the case of a few small seepages. Everywhere there are pipe lines and storage tanks, but no oil to be seen. Oil field development in the case of a large deposit usually implies a forest of derricks with their bases almost touching, gushers coming in with a roar and spraying oil for hundreds of yards about, oil everywhere in evidence, and often pouring into open sumps or reservoirs—in fact, waste everywhere. But at Masjid-i-Sulaiman there is no hurly burly of competitive drilling, no spouting oil, no waste. Big wells are brought in with hardly the loss of a gallon. This is due to scientific exploitation, such as can take place only when the feverish element of competitive drilling and development is eliminated. Except to the trained observer there is nothing to indicate that the enormous present production of over 4,500,000 tons of oil each year is being brought out of the ground. In this respect it is the least spectacular of the world's oil fields; but from the economic point of view it is a model of what an oil field should be.

The high standard of practice in the Persian fields is due to their development by a single company, with a complete organization carefully built up for this special purpose, and with every inducement to proceed with the work in a methodical and scientific way, instead of being rushed by competition into reckless and wasteful exploitation. The Persian oil industry for this reason occupies a unique and most fortunate position, and these rich mineral resources must be a great asset in the development of the country.

Rich Wells

Well No. F. 7, which produced nearly 7,000,000 tons of oil, is described; and the pamphlet states:

Other rich wells in the main Persian oil field—some of which surpass even No. F 7 in their flow—include No. B 188 with a daily average production of 600,000 gallons, and Nos. N 17 and B 75 and 147, which produce over 550,000 gallons a day each, and many others which can produce between 400,000 and 500,000 gallons daily.

At the present time some 50 wells have been connected up with the main pipe lines through flow tanks, and a further 55 wells have been completed and can be so linked up whenever required. In addition a large number of wells have been sunk to the producing oil rock, and can be easily drilled in when required. The drilling is mostly done by the percussion method, and there are nearly 60 outfits of this type in operation. Of rotary machines there are five, as this system is less well adapted to the general nature of the Persian strata, though effective in certain formations, a test for geological purposes being carried to a depth of 5,820 feet by this method.

There are in the Masjid-i-Sulaiman district nearly 500 miles of pipe line, exclusive of the main pipe line from Tembi to Abadan, and 113 tanks with a capacity of 244,000 tons to accommodate the regular flow from the wells. This flow, however, comes from a very few wells—not more than a dozen as a rule—the flow and pressure being such as to make it unnecessary to bring a greater number into active production, though they are always ready on the mere opening of the valves.

Pipe Lines

The headquarters of the pipe line staff is at Ahwaz, where offices, workshops and stores are situated. There is a hospital at this point and the company has constructed special accommodations for its workmen outside the town.

The main pipe line, which connects the oil fields with Abadan and the seaboard, is 145 miles in length. The first section has to traverse two ranges of hills, of which the Imam Riza ridge, the highest point crossed, is 1,350 feet above sea level. Once these mountains are passed, the desert stretches away almost perfectly flat for a 100 miles to the coast. In order to meet the demands made upon it by the constantly increasing production of the oil fields, the original pipe line, laid in the early days of the company under conditions calling for the utmost courage and endurance as well as engineering skill, has been steadily amplified and improved. When certain additions, now under construction, have been completed, it will consist of two lines of 10-inch and one of 12-inch diameter.

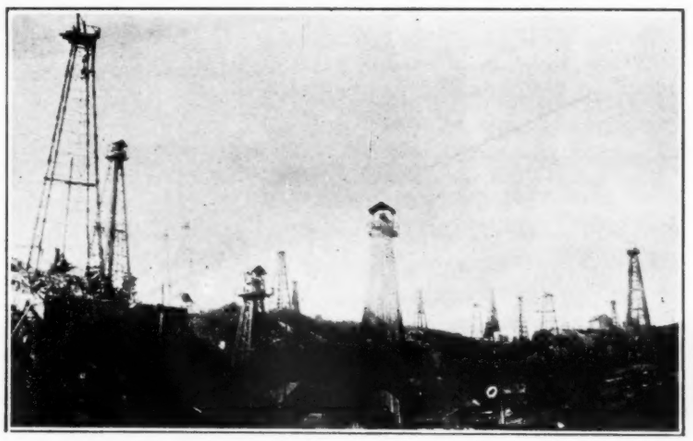
In order to force the oil over the mountains and, later, to keep it in steady movement across the plains, powerful pumping stations are in operation at Tembi, nearest the oil fields, and at Mullasani, Kut Abdullah, and Dorquain. The pumping machinery at these stations is of centrifugal type, and represents the highest modern standards of pipe line practice. The power used in the work is obtained from steam turbines, gas being the fuel used at Tembi, and crude oil from which the lighter fractions have been removed by distillation in local topping plants being used at the other three stations.

Abadan Refinery

Abadan, including the refinery and tank farm, the loading station at Bawarda, and the residential section covers over 4 square miles. All this scene of intense industrial activity, with its population of more than 40,000, its workmen's houses, its hospitals and club houses and restaurants, its streets of handsome bungalows—all this picturesque blending of the immemorial East with western industrialism in its most modern and most elaborately organized form is the product of a few years' development. It is entirely due to the progress and prosperity of the Persian oil industry.

The tank farm, which is the coastal terminus of the pipe line, contains at present over 150 storage tanks, most of them of a capacity of 10,000 tons. The total amount of the potential storage at the beginning of 1927 was 1,250,000 tons, or nearly 350,000,000 gallons—a capacity sufficient to meet all reasonable needs at present, especially with so accurately and easily controlled a production as in the Persian oil fields. All that has to be done to secure the output required for the refinery at Abadan, or for export, is to open the necessary number of valves, by means of which the production of crude can, from day to day or from hour to hour, be regulated to a nicety, just as readily and as accurately as when one turns on the water for one's bath.

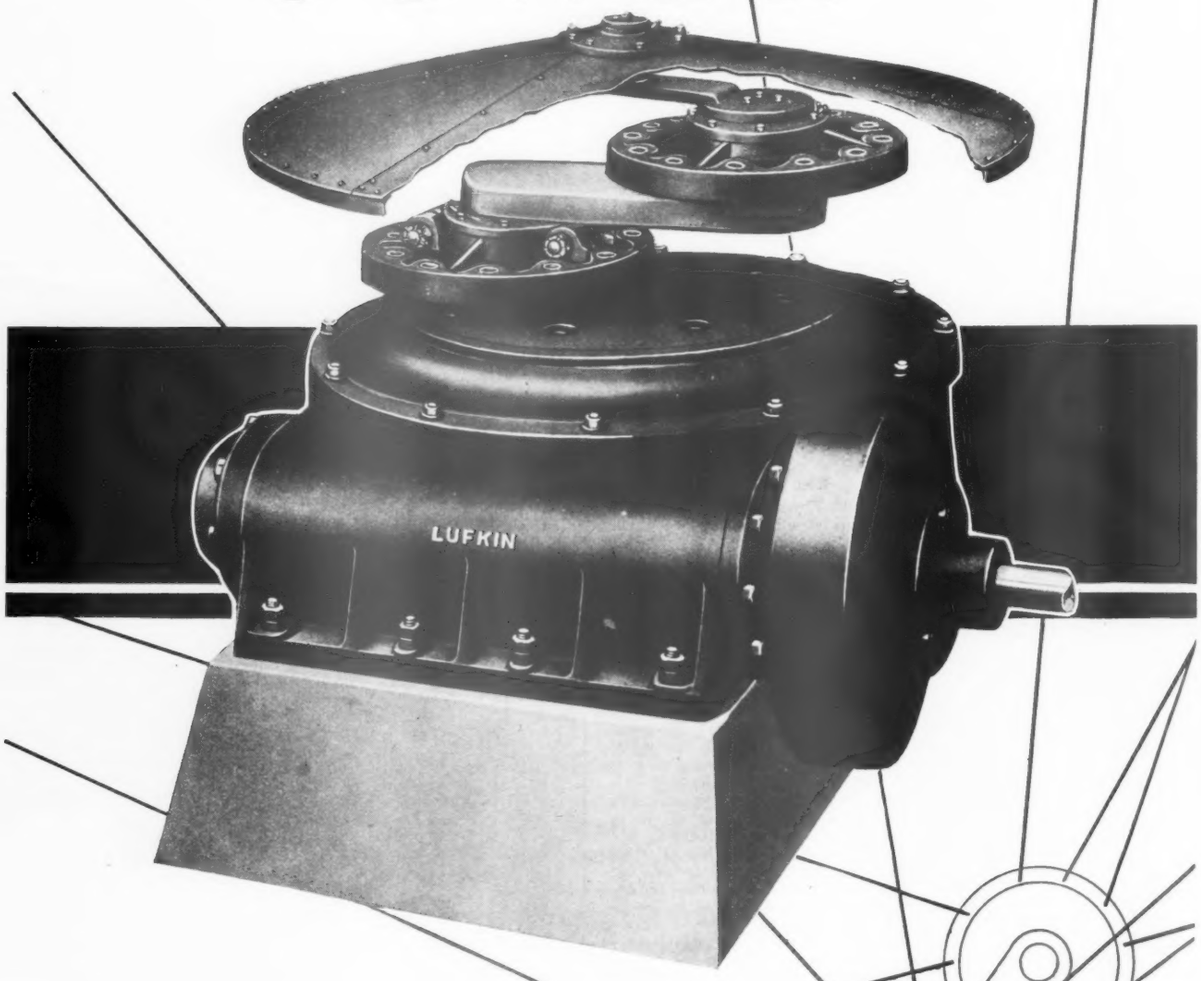
MORENI FIELD IN RUMANIA



Wells in the Valea Frasinului, as seen looking westward up the valley. Valea Frasinului at Tuicani, Moreni Field, has been made famous by its large producing wells from the Dacic formation. The most recent wells are being deepened to a lower formation, known as the Meotic, where another large production is expected.

VIEW OF SURAKHANI FIELD, RUSSIA

LUFKIN
POWER



LUFKIN WORM GEARED POWER does away with belts and practically eliminates shut-down time.

24

Manufactured at Lufkin, Texas
By
THE LUFKIN FOUNDRY AND MACHINE CO.

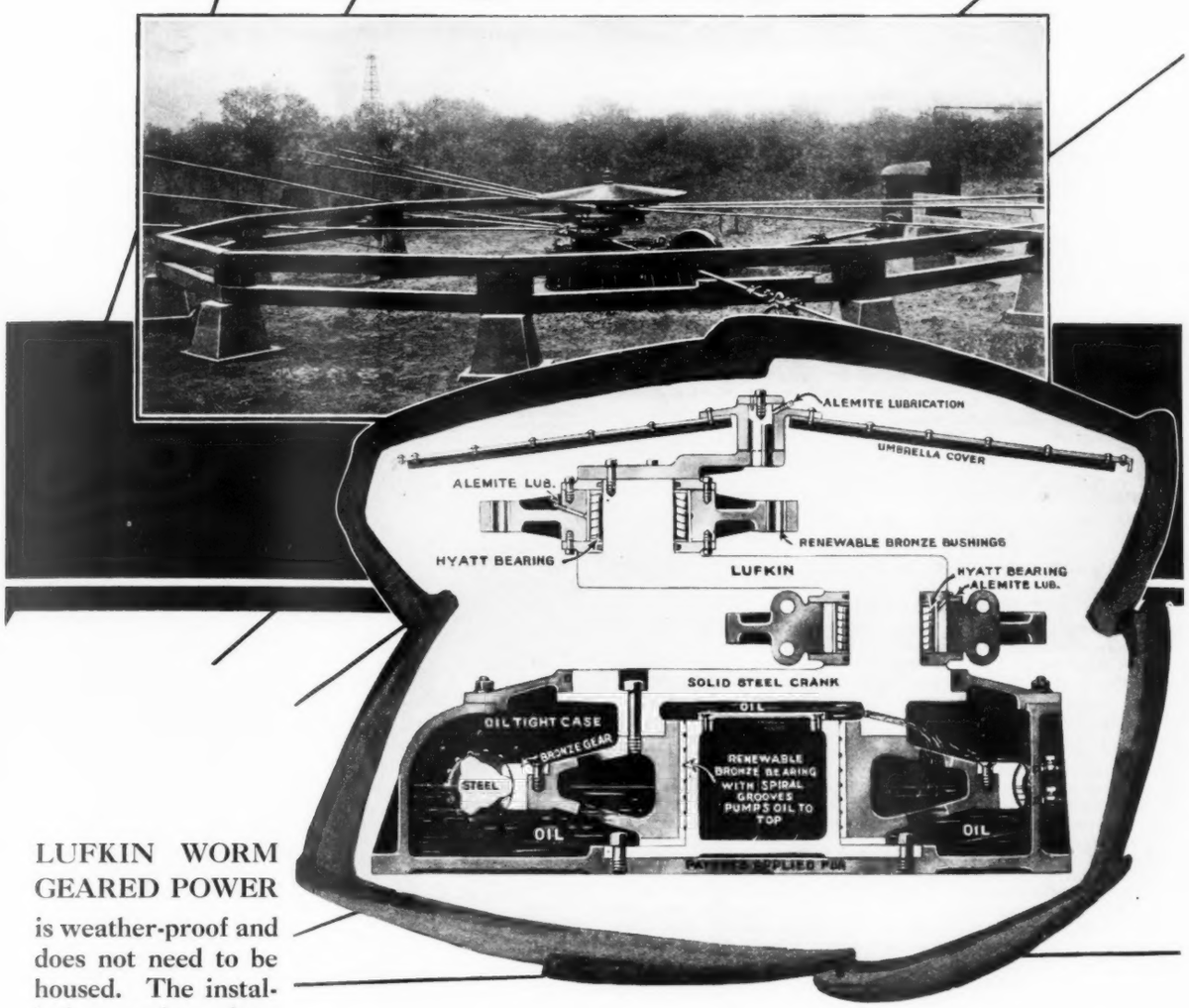
DISTRICT OFFICES:

LOS ANGELES TULSA NEW YORK HOUSTON

WAREHOUSES:

SEMINOLE, OKLAHOMA ODESSA, TEXAS EL DORADO, ARKANSAS

LUFKIN POWER



LUFKIN WORM GEARED POWER is weather-proof and does not need to be housed. The installation cost is a minor item.

NOTE—the crank is equipped with Hyatt roller bearings—worm gear runs in oil.

Manufactured at Lufkin, Texas
By
THE LUFKIN FOUNDRY AND MACHINE CO.

DISTRICT OFFICES:

LOS ANGELES TULSA NEW YORK HOUSTON

WAREHOUSES:

SEMINOLE, OKLAHOMA ODESSA, TEXAS EL DORADO, ARKANSAS

Exports Show Seven Per Cent Gain

But During First Nine Months Values Shrank 11 Per Cent Owing to Reduced Prices. Gasoline Volume 80 Per Cent

(Specially Contributed)

Our total exports of crude and refined oils for the first nine months of 1927 amounted to 97,539,985 bbls. as compared with 92,326,670 bbls. for the same period of 1926. While quantitatively this increase amounts to approximately 7 per cent, values have shrunk from $419,734,361 in 1926 to $372,042,305, or approximately 11 per cent, thus reflecting the marked price retractions of the past nine months, which are, of course, a continuation of the general price decline existing for a much longer period. It is interesting to note that of this decrease in total value of all oil exports amounting to $47,692,056, some $39,192,128, or 80 per cent, was absorbed by gasoline alone.

The following table gives a brief comparison by quantity and value of United States oil exports for the first nine months of 1927 as compared with the same period of 1926:

TABLE 1—Oil Exports Nine Months Ending September

Product—	1926 Quantity	1926 Value	1927 Quantity	1927 Value
Total crude, barrels	11,769,538	$21,515,432	11,406,722	$18,751,009
To Canada	9,812,294	18,149,691	9,354,511	15,613,507
To Cuba	328,539	888,245	403,217	1,057,786
To Japan	1,088,253	1,271,451	1,225,235	1,397,227
To other countries	540,452	1,206,044	323,759	682,489
Total gasoline, naphtha, light prods.	32,705,755	204,271,809	32,900,591	165,079,681
Total kerosene	16,275,705	74,202,494	14,044,667	58,997,315
Total gas and fuel oil	24,616,750	32,062,951	31,948,571	37,640,059
Total lubricating oil	6,860,720	64,833,917	7,225,048	66,796,701
Total lubricating greases, barrels	70,328,411	3,822,285	73,313,648	3,933,260
Total paraffin wax, barrels	253,043,294	14,088,767	248,242,352	11,354,960
Total asphalt, tons	97,595	2,361,888	275,678	6,695,680
Total petroleum coke, tons	61,688	676,819	79,310	869,110

Lead All Exports

Refined oils constitute the largest single group of American manufacturers exported.

A factor commonly ignored in all discussions of oil exports is that of the American capital investment abroad in the form of tanks, warehouses and all distributional facilities necessary to carry on this trade which distinguishes it from all other American exports. While the oil companies themselves are extremely reticent about giving out even approximations of this investment, it is conservatively estimated at $2,000,000,000 at least. This underlies the real significance of the current worldwide tendency to legislative control of the oil industry in foreign countries as outlined in this current issue. Not only is the continuity of our oil export trade subject to progressively increasing disturbance by this movement toward state monopolies and state subsidies to nationalized organizations, but a tremendous capital investment is jeopardized, in most cases subject only to political rather than legal redress.

Refinery Expansion Abroad

Another factor to disturb the current trend is that of the tendency to develop a refining industry abroad. The Standard Oil Co. of New Jersey some time ago announced its intention to spend some $25,000,000 in a refinery and tide water distribution center at the mouth of the Magdelena River in Colombia. The Venezuelean government is known to be offering inducements to American companies as well as British companies in Venezuela for extensive construction of refining facilities. Argentine already has a government operated refinery. Negotiations are progressing in Peru for the establishment of a sizeable refinery for the account of the Peruvian government. The Mexican Eagle Petroleum Co. has contracted for equipment for a large refinery to be built on the Island af Aruba, Dutch West Indies. According to recent press dispatches, France, by a newly-proposed law, has ideas of regulating imports of refined products while a preferential duty on crude is to rehabilitate the refining industry of France, which has some 11 refineries, only one of which is now operating. Reports from Durban, South Africa, show that consideration is being given to the possibilities of either a government refinery or a refinery operated by commercial interests enjoying preferential treatment in taxes and duties. In Australia, negotiations are reported on behalf of Royal Dutch-Shell interests in the probable purchase of the refinery heretofore operated by John Fells, Ltd., but at present shut down. The only other refinery in Australia is that of the Commonwealth Oil Co., Ltd., a joint enterprise of the Anglo-Persian Oil Co., and the commonwealth government. True, these factors concern long-term operations but their effect must be taken into consideration in the forward development of the petroleum industry of the United States.

The following tables give the quantitative comparisons of the exports of the major petroleum products from the United States for the first nine months of 1927 compared with the same period of 1926. For full details as to values as well as quantities the Monthly Summary, Part 1, for September, as issued by the Bureau of Foreign and Domestic Commerce, should be consulted.

PETROLEUM EXPORTS NINE MONTHS ENDING SEPTEMBER

Gasoline, Naphtha and Other Light Products
(Barrels of 42 gallons)

Country of Destination	1926	1927
Belgium	890,539	887,440
Denmark	550,352	897,962
France	5,825,707	4,983,013
Germany	1,291,638	1,076,988
Italy	927,191	828,837
Netherlands	1,342,533	1,292,890
Norway	246,449	260,134
Portugal	91,302	129,275
Spain	567,435	733,940
Sweden	496,261	977,460
United Kingdom	11,459,493	10,439,879
Canada	1,891,467	2,245,339
Panama	59,991	94,054
Mexico	171,929	206,115
Cuba	596,701	371,965
Dominican Republic	44,602	52,760
Argentina	509,895	921,206
Brazil	786,772	717,525
Uruguay	299,491	244,749
Other South America	97,289	126,711
China, Hong Kong and Kwantung	182,336	300,791
French Indo-China	46,675	20,135
Japan	273,708	291,297
Philippine Islands	291,813	180,919
Australia	1,405,488	1,813,709
New Zealand	769,982	890,684
British South Africa	334,764	482,255
British West Africa	137,869	199,978
French Africa	302,549	454,520
Morocco	56,535	63,268
Portuguese Africa	84,010	63,943
Spanish Africa	51,837	40,469
Other countries	621,152	610,381
Total in bulk	28,426,780	29,353,746
Total in containers	4,278,975	3,546,845
Grand total	32,705,755	32,900,591

Illuminating Oil (Kerosene)
(Barrels of 42 gallons)

Country of Destination	1926	1927
Belgium	432,065	429,807
Denmark	376,188	385,504
France	1,359,144	630,376
Germany	425,302	540,552
Italy	387,440	221,135
Netherlands	1,362,584	1,229,717
Norway	235,378	225,743
Portugal	215,046	220,269
Spain	117,413	51,171
Sweden	166,438	173,953
United Kingdom	2,165,453	2,327,783
Canada	181,021	101,340
Central America	93,385	46,674
West Indies and Bermudas	116,218	121,482
Argentina	265,558	311,493
Brazil	446,766	513,133
Uruguay	149,139	177,723
British India	1,383,527	1,174,380
British Malaya	44,786	78,840
Ceylon	476	2,858
China, Hong Kong and Kwantung	2,399,965	2,192,373
Netherland East Indies	178,204	152,578
French Indo-China	77,365	51,826
Japan	1,885,918	710,334
Philippine Islands	198,158	126,094
Australia	428,988	445,007
New Zealand	93,082	93,329
British Africa	386,214	461,281
French Africa	169,841	225,447
Portuguese Africa	43,048	51,286
Other countries	491,685	571,179
Total in bulk	12,273,486	9,870,962
Total in containers	4,002,119	4,173,705
Grand total	16,275,705	14,044,667

Gas and Fuel Oil*
(Barrels of 42 gallons)

Country of Destination	1926	1927
Belgium	372,657	428,927
Denmark	250,172	588,384
France	647,361	81,650
Germany	566,730	1,008,942
Italy	193,506	106,264
Netherlands	351,897	561,909
Norway	151,648	69,096
Spain	202,255	44,509
Sweden	163,747	218,571
United Kingdom	3,471,260	4,317,763
Canada	2,896,457	1,806,990
Panama	3,731,818	5,829,618
Mexico	717,256	802,023
Cuba	190,025	1,376,377
Other West Indies and Bermudas	136,277	324,765
Argentina	1,628,598	3,169,236
Brazil	339,015	888,075
Chile	3,296,922	3,012,642
Other South America	786,724	1,084,973
China, Hong Kong and Kwantung	770,959	941,100
Japan	1,587,092	3,073,111
Philippine Islands	609,479	492,217
New Zealand	770,128	649,681
French Africa	221,942	48,072
Other countries	563,854	1,034,674
Total	24,616,750	31,948,571

*Does no: include fuel or bunker oil laden on vessels engaged in the foreign trade, which aggregated during the month and nine months ending September, as follows: September, 1926, 4,040,325 bbls., valued at $6,251,312; 4,435,603 bbls., valued at $6,565,569; nine months ending September, 1926, 34,313,547 bbls., valued at $52,320,986;; 1927, 37,082,405 bbls., valued at $53,472,914.

Lubricating Oil (Red and Pale)
(Barrels of 42 gallons)

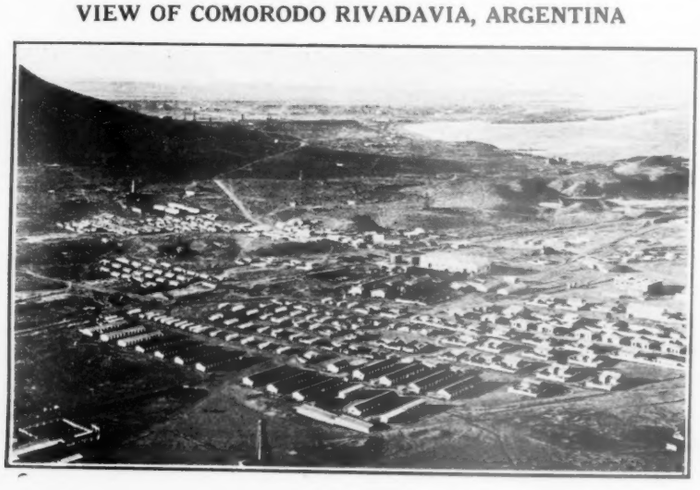
Country of Destination	1926	1927
Belgium	340,595	467,200
Denmark	72,785	103,690
France	734,448	627,838
Germany	366,919	562,713
Italy	103,717	134,337
Netherlands	104,653	64,376
Norway	25,059	.....
Spain	61,379	101,215
Sweden	23,371	49,263
United Kingdom	1,127,273	881,043
Canada	143,607	193,424
Mexico	24,267	36,124
Cuba	29,451	43,586
Argentina	61,987	114,160
Brazil	88,155	115,253
Chile	25,823	26,580
Other South America	43,569	43,954
British India	128,459	224,769
China, Hong Kong and Kwantung	81,866	103,091
Netherland East Indies	21,571	34,295
Japan	99,819	133,129
Philippine Islands	39,192	31,543
Australia	128,771	129,486
New Zealand	29,055	29,279
British Africa	18,605	20,892
Egypt	13,236	10,470
Portuguese Africa	7,756	8,945
Other countries	101,097	170,425
Total red and pale	4,046,492	4,461,010
Total black lubricating oil	419,438	542,314

Lubricating Oil (Cylinder)
(Barrels of 42 gallons)

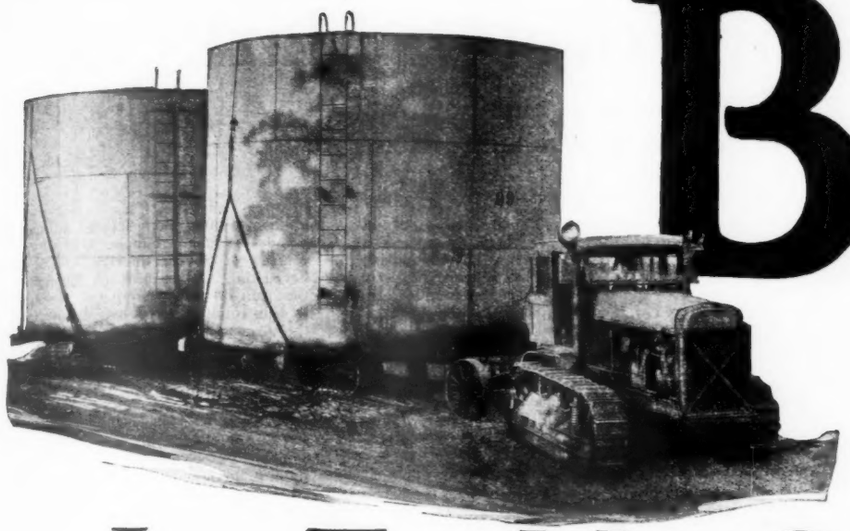
Countr yof Destination	1926	1927
Belgium	96,926	79,056

(Continued on Page 209)

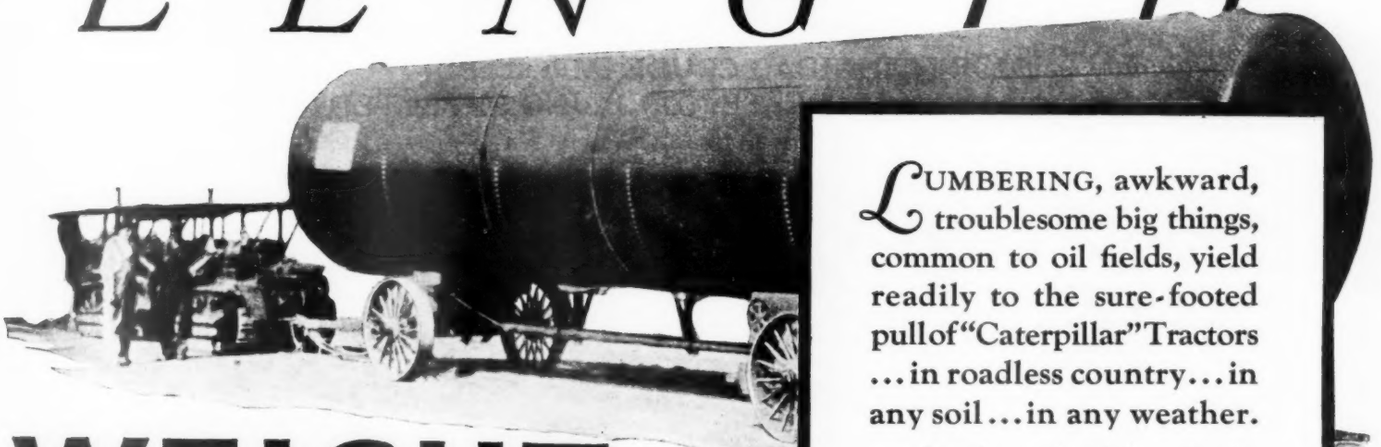
VIEW OF COMORODO RIVADAVIA, ARGENTINA

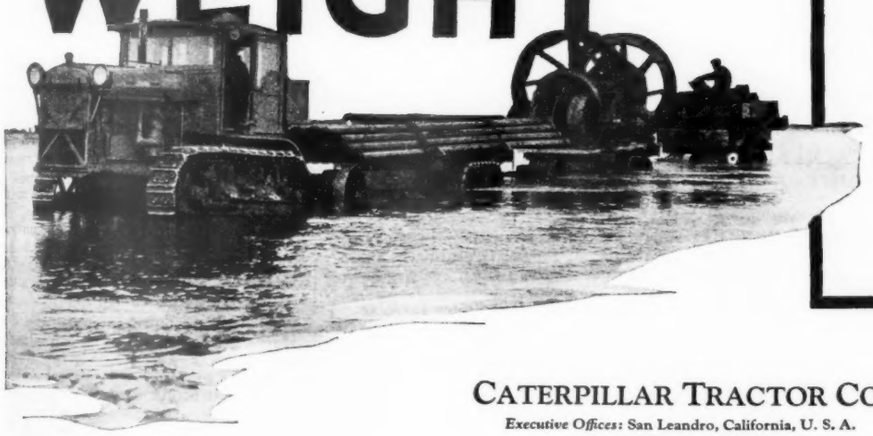


COMODORO RIVADAVIA FIELD, ARGENTINA



Bulk LENGTH WEIGHT





LUMBERING, awkward, troublesome big things, common to oil fields, yield readily to the sure-footed pull of "Caterpillar" Tractors ... in roadless country... in any soil ... in any weather.

Equipped with winch, "Caterpillars" establish new, better ... quicker ... cheaper methods ... the staunch ally of the oil man.

THERE IS A "CATERPILLAR" DEALER NEAR YOU

Send for the NEW BOOK—

...PRICES...

2-TON $1850
Peoria, Illinois

THIRTY $3000
Peoria or San Leandro

SIXTY $5000
Peoria or San Leandro

CATERPILLAR TRACTOR CO.

Executive Offices: San Leandro, California, U. S. A.

Sales Offices and Factories:
Peoria, Illinois San Leandro, California

Distributing Warehouse: Albany, N. Y.

New York Office: 50 Church Street

Successor to
BEST C. L. Best Tractor Co. The Holt Manufacturing Company HOLT

13727

CATERPILLAR
REG. U.S. PAT. OFF.

Foreign Oil for Foreign Markets

Building of Refineries Abroad to Supply Growing Demand for Petroleum Products There

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 26.—A rearrangement in the petroleum refining industry of the world is gradually taking place and it may be expected that within a year or two the oil fields outside of the United States will very largely be supplying the demands for the principal products of petroleum in the foreign markets.

As a purely economic development, this change, in taking care of foreign demands for the products of oil, conforms to one phase of the policy of conservation of the American oil supply that has long been discussed in government circles here. This is the policy of those who contend that the United States is moving toward the exhaustion of its petroleum supplies by supplying world markets with these home products, whereas foreign oil deposits may thus be conserved almost untouched.

It cannot be said that the movement now under way for supplying foreign demand for refinery products from foreign oil fields has been brought about for the purpose of conserving the American oil supply. It has come naturally as the result of the development of new fields in South America, Mesopotamia and elsewhere, as well as the more intensive development of oil deposits that have long been worked in other parts of the world.

As a natural economic result from the discovery of new and prolific oil fields has come the question of providing refining facilities in their vicinity and the supplying of world demand by the shorter and direct ocean routes by which deliveries can be made. The economy involved in supplying these world markets from refineries near the foreign oil fields is said to be too great to be ignored.

To Refine Their Own Crude

The thought of bringing crude oil from Venezuela and Colombia to the United States for refining as a permanent method of taking care of that production is rapidly disappearing. In both of these countries plans are under way not only for perfecting pipe-line systems to the coast, but for the construction of large refineries that can care for all of the crude oil produced in that region of the world.

In Venezuela the government has been offering inducements to American oil interests to establish refineries, as the Venezuelans are opposed to the policy of the Royal Dutch-Shell, which has preferred to establish refineries in the Dutch West Indies and not on the soil of Venezuela. They realize that it is to the economic advantage of that country to refine oil there rather than ship it out in the form of a crude product to be refined elsewhere.

The Pan-American company, with its subsidiary, the Lago, is in a particularly favorable position to take advantage of these invitations. While the Gulf and Texas companies have refineries on the Gulf of Mexico, with a comparatively short haul, it is today a problem whether they will be able advantageously to treat Venezuelan crude oil in that way. As the Pan-American company and its subsidiary, the Lago, are under the control of the Standard Oil Co. of Indiana, it is not likely to be long before this new alignment in the refining industry takes definite shape.

In Colombia the pipe line, first constructed to transport 30,000 bbls. of day, has been increased to 50,000 bbls., and the Tropical Oil Co., subsidiary of the Standard Oil Co. of New Jersey, has already established a refinery to handle 6,000 bbls. a day in Colombia. This does not go very far, as it is all consumed in the domestic trade of Colombia and that company has practical control of the Colombian market. However, it is believed to be only a question of time when this refining capacity will be enlarged so that the products of petroleum from Colombian oil fields will be shipped more directly to world markets outside of the United States. There is now in prospect of erection additional refining facilities to cost $25,000,000 gold at the mouth of the Magdalena River, which will give 15,000 bbls. a day for export.

No Native Competition

In Peru the Standard Oil Co. of New Jersey has two refineries, the larger of which handles 15,000 bbls. of crude oil daily and this crude oil is exported very largely. There is no native company in Peru that competes in this business.

In Venezuela, Colombia and Peru, as is well known, there has been an astonishing development of large wells during the past year. As a rule, these wells have been shut in, awaiting better transportation, and, according to present prospects, also awaiting refining facilities. Only an insignificant part of this production will be needed for domestic uses, the great bulk of the product to be distributed over the most available trade routes.

The Argentine does not appear to have more oil than is necessary to take care of its very large domestic demand. The Bethlehem Steel Corp. has provided the Argentine with a refining plant of 15,000 bbls. a day. The railroads and industries of that country have created a larger demand for such products than any other country of South America, and it is believed they will require all the petroleum that can be produced there. In addition to this condition, the petroleum fields of the Argentine are owned by the government also wholly, and it is the policy of that government to retain its supply as far as possible for its own development.

Oil Claims Demonstrated

The bringing in of a large well by the Turkish Petroleum Co. in the Mosul oil field is accepted as a practical demonstration proving the claims that have long been set up respecting the richness of the oil in the little kingdom known as Irak, created by British influence and upon which the Turkish Petroleum Co. depends for the rights it has received by its concession.

A pipe line from Irak to the Mediterranean Sea, convenient to the Port of Suez, is being discussed, and its building is regarded as only a matter of sufficient time to determine upon a feasible plan. The obstacles that confront this plan are largely political, as the British wish to avoid running the pipe line through any territory not controlled by them. The plan is to establish refineries on the Mediterranean, and this location will then be a great bunkering station for ships passing through the Suez Canal. There is nothing new about this project because it has been discussed many years before it was definitely known what interests would be able to control the old field of Mosul.

There are under consideration large plans for the development of refineries to take care of the great Russian oil field at Baku and of petroleum produced elsewhere in that country.

The Dutch East Indies are also moving in the development of refineries and the same condition prevails in Persia, where a subsidiary of the Anglo-Persian company for the refining of oil has been organized and known as the Khanaquin Oil Co., Ltd.

American Companies Not Eliminated

It will be observed that this new movement toward supplying world demands for oil outside of the United States does not eliminate American oil companies from the industry contemplated. The superiority of the American refining machinery and the greater efficiency of American operatives of oil refineries is much in favor of American companies unless and until foreign companies are able to improve their methods and efficiency of personnel to place them on an equality with this American enterprise.

World demand for petroleum and its products is increasing at such a steady rate that it is not certain that this world development of refining interests outside of the United States will have any great effect on the American industry during times of normal production. As is well known, American production for a long time prior to recent flush production in Oklahoma and Texas has been little more than equal to take care of American consumption.

What is regarded as likely to happen is that the importation of crude oil for refining in the United States and for reexport will in part gradually diminish, leaving this work of refining to be done nearer the foreign oil fields.

It should be remembered that this rearrangement of world refineries is also to a considerable extent influenced by the policies of governments, which for the past seven years have been reaching out for more control of refining interests.

MORE TRINIDAD CRUDE IMPORTED; INCREASED DRILLING EXPECTED

By Robert E. Taylor
Minerals Division, United States Department of Commerce.

The Island of Trindad has, since 1908, the first year of commercial production, been an important source of petroleum. Tobago has no producing wells as yet, but the reports of geologists who have prospected the island indicate the probability of oil deposits.

Trinidad was opened to commercial production of crude oil in 1908, when the first well was brought in near Pitch Lake. This section of the island is still very productive. Production has also been obtained in the Barrackpore, Guayaguayare, Tabaquite, Point Fortin, San Fernando and Fyzabad Fields. Excellent results are secured in a drilling range of 1,450 to 2,200 feet. The discovery of productive sands at much deeper levels is anticipated. At present, however, there is no necessity for deep drilling, except to prove a new field, so long as the yield from shallow wells continues at high levels.

In 1926 new wells drilled totaled 127, of which 81 were on Crown lands and 46 on lands privately owned—an increase of 28 wells during the year. Oil was found in 77 of the new wells. At the end of 1926, 17 companies were conducting active drilling operations, compared with 19 at the end of 1925.

Yield of Exceptional Quality

Many Trinidad operators have met with serious drilling difficulties. The soft and caving nature of the substrata and the high sand pressure cause many wells to produce heavily for a short time and then sand up completely. Although the total annual production is not large when compared with the yield from producing areas in other countries, the oil is of exceptional quality and can be obtained cheaply. One company, the Trinidad Consolidated Oil Fields, recently published an analysis of crude taken from a well in the Fort George area. This showed over 20 per cent gasoline, 9 per cent kerosene and 8 per cent naphtha, while 55 per cent of the residue was suitable for lubricating oils. Oil from the Tabaquite district is said to be even better.

The principal refineries are those of the Trinidad Leaseholds, Ltd., at Pointe-a-Pierre, the United British refinery at Point Fortin, and Trinidad Central Oil-Fields, Ltd., at Tabaquite. All three have modern plant equipment and obtain their supplies of crude locally. In addition, there are a number of small topping units for the use of individual companies, but their output is relatively unimportant The three large refineries produce gasoline, kerosene, Diesel oil, gas oil and fuel oil. The refining of lubricating oils as yet has not been undertaken on a large scale. The Trinidad Central Oil Fields, Ltd., refines by the batch system, with a capacity of 2,000 to 3,000 tons a month, the gravity of the crude handled running about 42 degrees. The United British refinery employs the Trumble system of topping, handling crudes averaging 16 degrees with a production of about 10,000 tons a month.

The Trinidad Leaseholds employs two continuous topping plants with rerunning stills, in addition to a double unit Dubbs cracking plant. The crude averages about 22 gravity. Monthly production figures for this company are not available but its monthly average in 1926 was well in excess of 40,000 tons. This figure has since been increased by the installation of additional equipment.

It is quite possible that one American company in Trinidad may secure concessions to exploit and develop certain Crown lands on the island. This concern has an ample supply of capital and has made unusual progress since beginning operations. Granting concessions to Americans, of course, is contingent upon the attitude of the British companies in the field.

Shipments to United States Increase

Every month about 100,000 imperial gallons are made into gasoline for local consumption and about 50,000 gallons into kerosene, also for local use and for export to near-by islands. The greater part of the remaining stock is exported as crude oil.

The exportation of crude to the United States during 1926 showed a considerable increase. Exports amounted to 15,207,426 American gallons. Shipments of crude to the United States during the first eight months of 1927 totaled 9,741,158 gallons, or 64 per cent of the 1926 figure.

Gasoline exports to the United States are on the increase. Exports up to September 1, 1927, totaled 13,883,057 gallons, compared with 17,218 593 for the entire year 1926, representing 80.5 per cent of the total for that year

The value of petroleum products exported during 1926 advanced to $9,078,-

(Continued on Page 212)

Selected for Severe

(not for easy)

SERVICE

Used By

American Well & Prospecting Co.
Boykin Machinery & Supply Company
Hopper Machine Co.
Latex Iron & Steel Works, Inc.
Lucey Manufacturing Co.
Lee C. Moore & Co.
Oil Well Supply Co.
Portable Rotary Rig Co.
Star Drilling Machine Co.

The Standardized Bearing of the Oil Fields

Used For

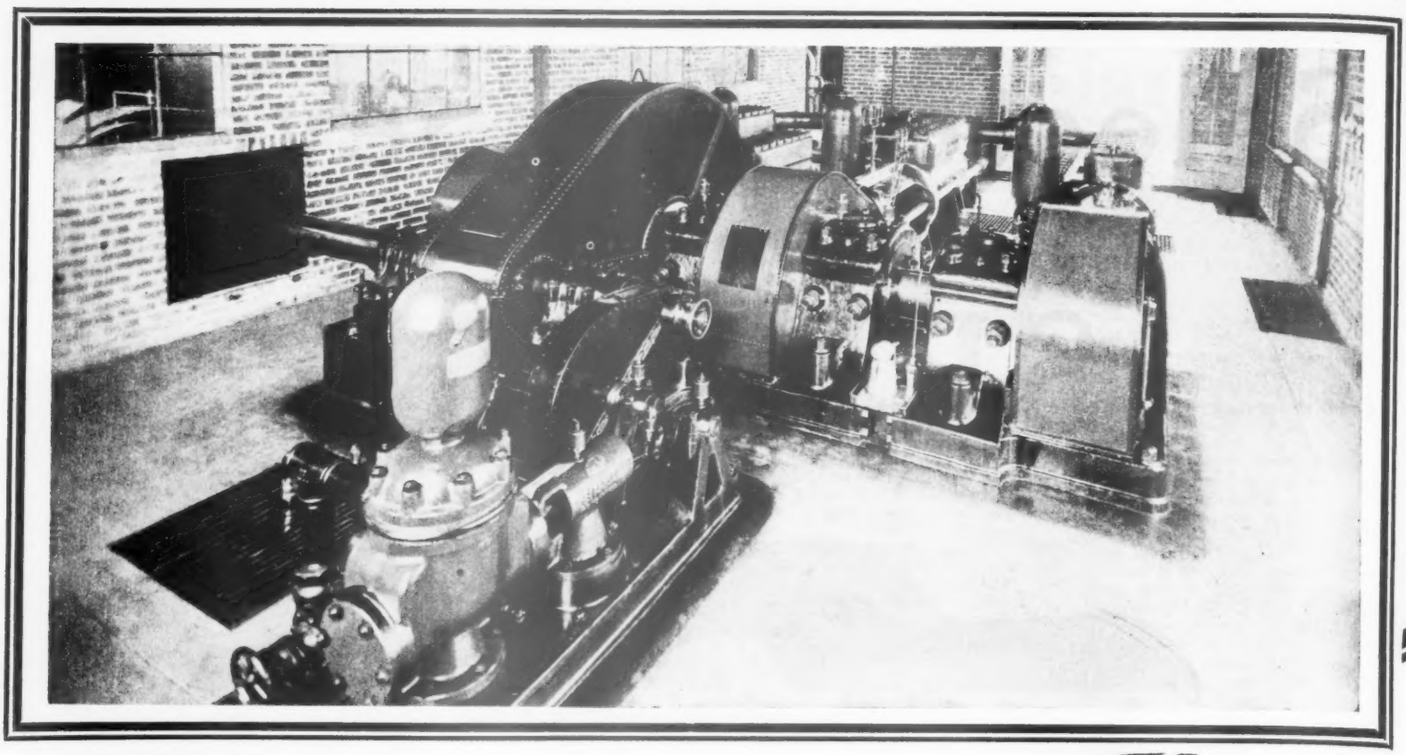
Traveling Blocks,
Crown Blocks,
Hoists, Winches,
Reverse Clutches
Drilling Machines
and for other drilling equipment

Write for Catalog No. 1006

LARGEST MANUFACTURERS OF ROLLER BEARINGS FOR INDUSTRIAL PURPOSES

AMERICAN ROLLER BEARING CO.
PITTSBURGH, PENNA.

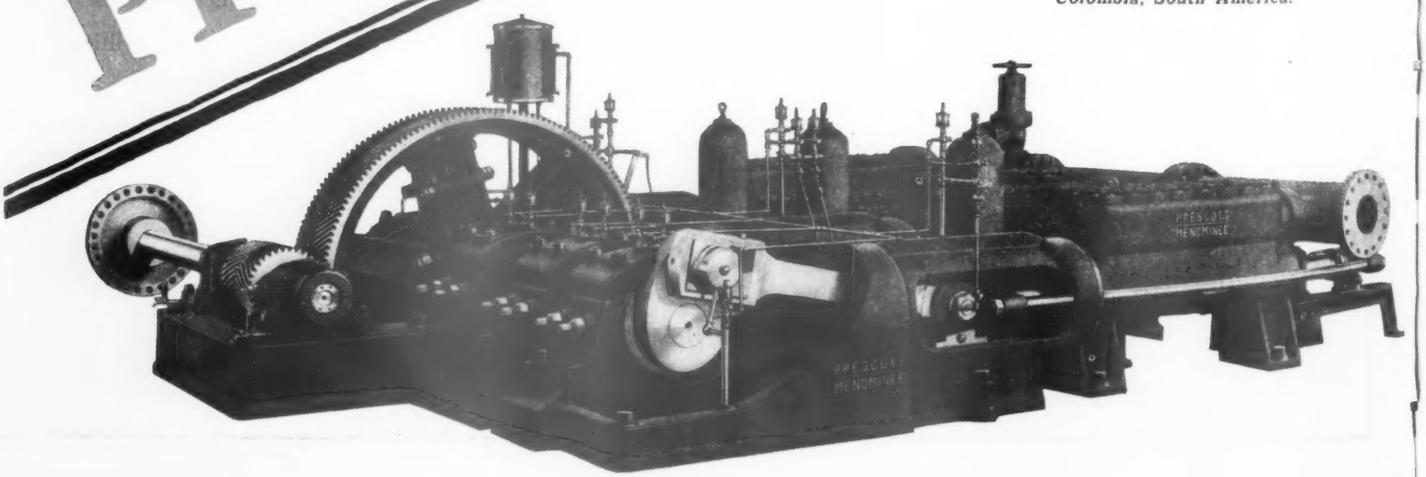
SPECIALISTS IN PRODUCTION OF ROLLER BEARINGS FOR THE OIL INDUSTRY



A 25,000-barrel Prescott Pipe Line Pump at the Ralston, Oklahoma, station of the Oklahoma Pipe Line Company.

PRESCOTT PIPE

The Andian National Corporation, Limited, of Toronto, Canada, installed eighteen of these 30,000-barrel Prescott Pipe Line Pumps in Colombia, South America.



efficient powerful LINE PUMPS reliable accessible

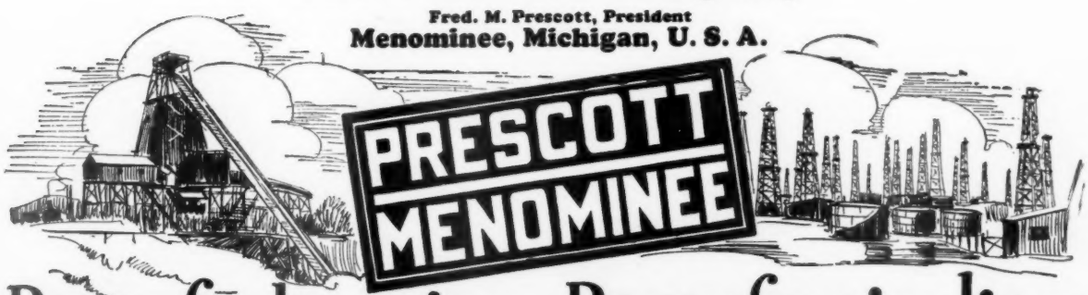
PRESCOTT pumps keep the oil moving. Keep it moving day-in and day-out without interruptions for repairs or adjustments. These powerful, dependable pipe line pumps are built to take high pressures, to carry heavy overloads, to stand up to the hardest kind of continuous service. They do it *economically*. They operate with an unusual minimum of power.

The repeated preference of leaders in the industry for Prescott Pipe Line Pumps is recognition of Prescott performance.

A bulletin on request.

The Prescott Company

Fred. M. Prescott, President
Menominee, Michigan, U. S. A.



Pumps for deep mines ~ Pumps for pipe lines

AUTOMOBILE REGISTRATION IN FOREIGN LANDS

(Continued from Page 152)

Country—	Passenger Cars	Buses	Trucks	Total Automobiles	Motor Cycles
**Gilbert & Ellis Is.	.....	.....	2	2	.....
§Greece	7,054	1,718	2,450	11,222	520
‡Grenada	322	29	31	382	32
§Guadeloupe	379	85	43	507	81
‡Guam	176	5	88	269	35
‡Guatemala	1,337	50	182	1,569	162
§Haiti	1,764	10	200	1,974	8
†Hawaii	23,562	170	7,403	31,135	409
†Hejaz	9	.....	.....	9	.....
‡Honduras	384	11	106	501	11
†Hong Kong	1,184	126	269	1,579	495
‡Hungary	6,712	234	2,345	9,291	2,941
†Iceland	355	.....	.....	355	.....
§India	66,217	2,500	13,208	81,925	13,771
§Iraq	2,315	.....	209	2,524	208
§Irish Free State	29,331	301	6,015	35,647	8,567
†Italian Somaliland	75	.....	13	88	10
§Italy	104,882	3,295	30,000	138,177	64,576
‡Jamaica	3,837	.....	1,146	4,983	371
§Japan	27,989	2,623	12,115	42,727	16,092
§Latvia	970	170	390	1,530	275
§Leeward Islands	193	.....	24	217	2
‡Liberia	39	.....	34	73	9
‡Libya	203	.....	238	441	140
‡Lithuania	526	62	81	669	249
§Madagascar	859	19	182	1,060	667
†Madeira Islands	310	120	85	415	100
†Malay States & Straits Settlements	19,620	1,464	2,842	23,916	3,939
‡Malta	956	124	128	1,208	363
‡Martinique	1,231	16	214	1,461	73
‡Mauritius	2,293	35	298	2,626	135
§Mexico	38,110	4,202	8,164	50,476	724
†Mocalla	56	.....	.....	56	.....
‡Morocco (Fr.)	7,883	.....	2,758	10,641	1,010
†Morocco (Sp.)	8,160	911	1,923	10,994	967
†Netherlands	43,094	4,000	22,000	69,094	43,520
§Newfoundland	1,197	11	141	1,349	61
‡New Zealand	101,462	1,772	19,990	123,224	32,101
§Nicaragua	351	1	50	402	60
§Norway	21,100	350	8,870	30,320	7,900
‡N. Ireland	13,318	.....	4,624	17,942	4,948
‡Nyasaland	390	15	115	520	908
‡Palestine	1,427	279	244	1,950	178
†Panama & Canal Zone	4,579	283	260	5,122	350
**Papua	90	.....	45	135	40
§Paraguay	412	119	180	711	.....
§Persia	3,500	50	900	4,450	380
†Peru	5,550	350	3,400	9,300	140
§Philippine Islands	15,903	2,077	4,345	23,325	707
§Poland	13,576	1,212	3,966	18,754	3,222
†Porto Rico	11,450	350	2,950	14,750	300
§Portugal	12,845	190	2,700	15,735	1,500
§Portuguese East Africa	500	8	100	608	200
‡Reunion	704	1	93	798	85
‡Rhodesia	4,000	20	300	4,320	1,000
†Rumania	11,900	1,700	3,100	16,700	750
†Russia	9,610	2,090	9,403	21,103	7,669
‡St. Lucia	75	18	3	96	14
‡St. Pierre	.....	.....	24	24	.....
†Salvador	1,250	50	150	1,450	100
‡Seychelles Islands	12	.....	.....	12	28
**Siam	2,257	1,388	674	4,319	382
‡Society Islands	301	9	55	365	41
**Solomon Islands	.....	.....	2	2	.....
†Spain	121,500	.....	13,500	135,000	9,000
†Sudan	600	78	171	849	219
§Sweden	77,000	4,000	18,220	99,200	28,000
§Switzerland	41,500	460	9,300	51,560	21,000
§Syria	3,854	39	269	4,162	60
†Taiwan	122	303	77	502	16
**Tibet	.....	.....	.....	.....	1
**Tonga	70	.....	55	125	8
†Trinidad & Tobago	2,675	571	240	3,486	531
‡Tunisia	4,200	85	360	4,645	585
†Turkey	6,000	.....	1,500	7,500	500
‡Union of South Africa	71,000	650	4,900	76,550	27,500
§United Kingdom	754,284	21,000	248,367	1,023,651	629,648
‡United States	*19,293,112	80,000	2,764,222	22,137,334	*134,679
†Uruguay	25,050	25	4,985	30,060	532
§Venezuela	8,000	45	2,000	10,045	315
‡Virgin Islands	333	4	55	392	10
†Yeman	11	4	.....	15	.....
†Yugoslavia	6,600	155	1,800	8,555	2,650
Foreign countries and noncontiguous territories—Total	4,225,816	114,374	1,172,743	5,512,933	1,591,562
Grand total	23,518,928	194,374	3,936,965	27,650,267	1,726,241

†Reliable estimates; official figures not available.
‡Official.
§Semiofficial; based upon official figures for an earlier period than January 1, 1927, or upon official returns for part or parts of a country for which complete figures were not available.
**Obtained from the "American Automobile" (Overseas Edition).
*Includes 135,941 cars and 3,133 motorcycles tax exempt as used by Federal, State and Municipal Governments.

CHEMICAL COAL AND OIL COMBINATIONS

(Continued from Page 140)

is rather prodigal in the use of anthracite coal and stove, furnaces, and heating systems do not show the same money-saving characteristics as those of Great Britain and Germany. She is now beginning to realize that she must make the proper changes for economizing her coal resources and also that it would prove more advantageous for her trade balance to import sufficient quantities of coal for the manufacture of a part of her needs in liquid combustibles than to continue to expend some 3,000,000,000 francs per annum for imports of a more expensive product such as gasoline.

New Coal Corporation

A new corporation, Carburants et Produits de Byntbese, has recently been organized by French coal mining interests, with a capital stock of 5,000,000 francs which may later be increased by a simple decision of the Administrative Council to 25,000,000 francs. Among the promotors and shareholders are included practically all the mining companies of the coal mining district of northwestern France in the Departments of Nord and Pas-de-Calais, which produce some 37,000,000 tons of coal per annum.

The new corporation has for its object the chemical treatment of combustib'es such as coal and lignites, as well as their solid, liquid and gaseous derivatives, for the manufacture of synthetic carburants and other by-products. It will itself arrange for the erection of the necessary factories as well as their exploitation.

A trial plant for the production of gasoline from lignite is being ins'alled at Saint-Julien de Peyrolas, in the Gard Department, by the Societe Anonyme de Fabrication des Essences et Petroles. Lignite will be obtained from a mine at Saint Paulet du Caisson, which now belongs to this company.

The carbonizing furnace used in this installation was supplied by the Allegmeine Elecktricitat Gesellschaft. This furnace has a daily capacity of 60 tons and is expected to produce from 80 to 100 liters of high grade gasoline per ton of lignite, in addition to numerous by-products, the chief of which is sulphur.

Supply of Lignite

The total supply of lignite in France is estimated at 2,000,000,000 tons. The value of the fuel obtainable from this amount of lignite would total approximately 400,000,000,000 francs—a sum roughly equal to the national debt of France.

It will be seen from the above that synthetic gasoline has passed from the experimental stage to early commercial production. The quantities to be produced in England, France and Germany during the next few years can take care of only a portion of the natural increase in petroleum consumption. An interalliance of international interests, including the Standard Oil Co. of New York, argues well for amicable relations in this far-reaching economic development already awakening practical interest in South America and the Far East as evidenced by the recent contract of Chilean interests with the International Bergin Corp. for the construction of a commercial plant in Chile, and the active attention of the Fushun colleries in Manchuria.

VENZUELA SECOND IN MONTHLY OUTPUT

(Continued from Page 130)

ican Petroleum Co. had been doing some prospecting, which resulted in September in the filing of a petition with the government requesting the passage of petroleum legislation and priority in obtaining a concession under such legislation. This action was immediately followed by petitions for concessions from the Royal Dutch, the Compania Mexicana de Petroles el Aguilar, and the West India Oil Co.

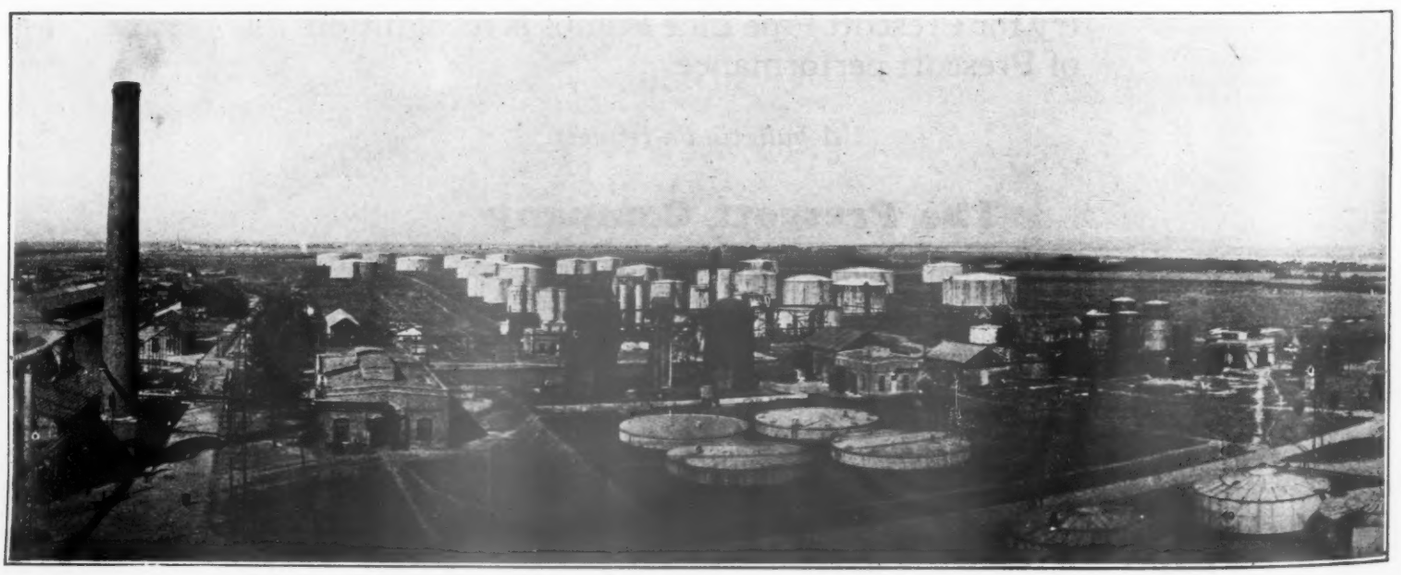
State Monopoly Proposed

The proposal for petroleum legislation was received with favor by the government, which on December 28, 1926, succeeded in obtaining the passage of a preliminary measure declaring all oil-bearing lands to be the property of the state and ordering the cancellation of all existing concessions which are not under development at the expiration of one year. It then drew up and presented to congress a general petroleum bill, which was passed by the Senate early in 1927. It has not yet been acted on by the Chamber of Deputies, however.

This law, as it stands at present, reserves to the state the exploitation of all petroleum deposits which may be discovered within its territory and authorizes the president to grant concessions, under written contract, for the exploration of tracts of land up to 500,000 hectares, if north of 47 degrees south latitude, or up to 5,000,000 hectares if south of that line. The exploration period may not exceed five years, while at the end of that period one-third of the land may be reserved for exploitation under 30 to 50-year leases. In no case, however, can the land reserved for exploitation exceed 500,000 hectares. The usual guaranties are required, and a tax amounting to 10 per cent of the production must be paid to the government.

In view of the interest shown the bill will probably come up soon after the opening of the regular session of congress in May. It is approved of in general, though there has been considerable com-

ROMANO-AMERICAN REFINERY AT TELEAJEN, RUMANIA

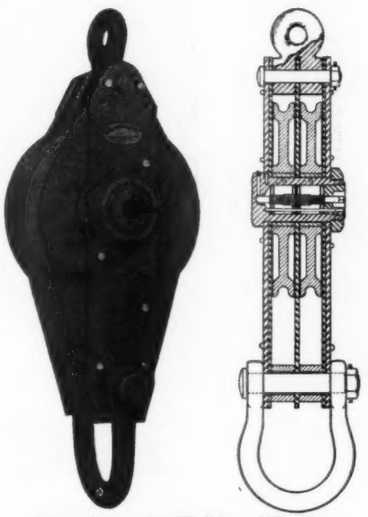


Dreadnaught PRODUCTS

QUICK ACTION TUBING TONGS

DREADNAUGHT TUBING TONGS

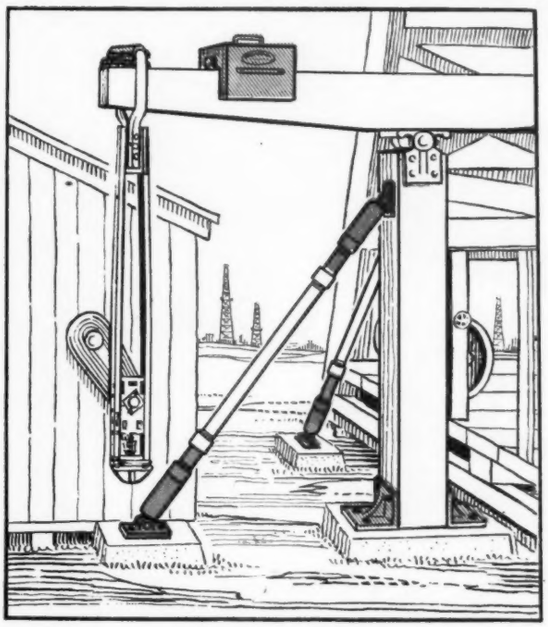
SPEED AND SAFETY



Dreadnaught Tubing Blocks

Size Blocks	Style	Diameter Sheaves	Weight Pounds
30 Inch	Single	16 Inch	230
30 Inch	Double	16 Inch	330
36 Inch	Single	20 Inch	320
36 Inch	Double	20 Inch	460
36 Inch	Triple	20 Inch	610

FOR MORE EFFICIENT OPERATION



BRACES

YOUNT Tubular Sampson Post Braces are furnished for any Draw Works or Sampson Post. Adapted to every rig, drilling or pumping, cable or rotary. Right and left-hand clevis castings make it easy to keep the braces always rigid. Booklet on request.

COUNTER-WEIGHT

(Patented)

WHEN pulling rods or tubing this Yount Pumping Counter-Weight may be rolled to the center of the beam, directly over the saddle, adjustable to a position which makes the pumping stroke smooth and vibrationless. Two clamping screws anchor it securely. Made for any walking beam.

STIRRUP BEARING

(Patent Applied For)

THIS Yount Oscillating Stirrup Bearing corrects alignment in walking beam or crank. In drilling, one man may engage or remove pitman from wrist pin without effort. Greatly reduces friction and eliminates the twisting action in pitman. Lasts a lifetime. Folder on request.

MANUFACTURED BY

Beaumont Iron Works Co.

BEAUMONT, TEXAS, U. S. A.

DREADNAUGHT
MFD. BY
BEAUMONT IRON WORKS CO.
BEAUMONT, TEXAS
U. S. A.

DISTRIBUTED BY

Frick-Reid Supply Co.

West of the Mississippi—
Stores Everywhere

[This Seal Appears on All Genuine Dreadnaught Equipment, and is a Guarantee of Quality.]

4 BOMBS

JIMMIE SHOOTER SAYS:

"It's a big part of my job to use every known safe-guard to protect my customers' men and property—and of course I want to guard against personal injury myself. When I use a Bolshevik, I *know* I have a Safety Period of at least 40 minutes, during which time it is impossible for the firing mechanism of a Bolshevik to explode the Bomb. I don't have to worry about wiring, short-circuiting, sneak currents or battery trouble. That's why I am so strong for the Bolshevik."

to meet every need

Always a "step ahead"—the pioneer—and still the only simple, mechanically operated Time Bomb, Bolshevik now offers the fourth member of the family—the Baby Twin, described below.

We have not developed these four different models from choice, but to meet definite needs that arose in different fields, as the shooters themselves outlined these needs to us—and asked us to solve the problems.

Since May 7th, 1923, when the first oil well was detonated with a Time Bomb, our bombs have grown in popularity, until today they are in use by 687 different oil companies, stocked by all Glycerin-Torpedo Companies, and endorsed by the Shooters in the field.

All Bolshevik Time Bombs provide a POSITIVE SAFETY PERIOD OF 40 MINUTES FOR LOADING AND LOWERING. Every part of their mechanically operated firing mechanism is visible, and can be tested before the bomb is lowered to the shot. Ask your Shooter to show you the working parts of the Bolshevik; then you will understand why shooters endorse and prefer them.

REGULAR

$50 The original Bolshevik. In successful use since May 7th, 1923. Water-tight and pressure proof heavy cast container, 1 clock and firing mechanism, capacity 3 sticks dynamite or 1 stick gelatine. Outside diameter 3⅛", weight 26 lbs. Absolutely lodestone proof. Price in Rocky Mountain Region $55.00.

TWIN

$80 Has 2 separate clocks and 2 firing mechanisms. Water-tight and pressure-proof cast container, weight 38 lbs. Length 34 inches; outside diameter 3⅛ inches. Capacity 6 sticks dynamite. Absolutely lodestone proof. Price in Rocky Mountain Region $85.00.

BABY TWIN

$80 Our latest bomb. For use in extra small casing and where Twin Timing units and exploding mechanisms are desirable. Water-tight and pressure proof container of Shelby seamless tubing. Capacity 6 sticks of dynamite. Weight 27 lbs. Length 35 inches; outside diameter 2¾ inches. Absolutely lodestone proof. Price in Rocky Mountain Region $85.00.

BABY

$50 For use in extra small casing, or where heavy gas pressure or flowing oil requires a minimum diameter bomb. Water-tight and pressure proof container of Shelby seamless tubing. One clock and one firing mechanism. Capacity 1½ sticks dynamite. Weight 11 pounds. Length 15 inches. Outside diameter 2¾ inches. Absolutely lodestone proof. Price in Rocky Mountain Region $55.00.

See Your Shooter—He Carries Them

The M & M Manufacturing Company

528 Citizens Natl. Bank Bldg., - - - Independence, Kansas

plaint by the rival companies to the effect that there are not more than 5,000,000 hectares of possible oil-bearing lands south of 47 degrees south latitude and that therefore the Pan American Petroleum Co., by right of priority in presenting its petition, will receive a practical monopoly of the territory where it is most likely that oil is to be found.

Pending final action by congress the various companies are continuing their prospecting in order to be in the best possible position to submit their definite petitions immediately after the passage of the act.

Shipments From Colombia

The following figures represent the shipments of crude petroleum from the port of Cartagena, Colombia, during each month of the present year, and the totals to date:

Month—	Amt. (Net Bbls. of 42 Gals.)
January	907,772
February	843,681
March	784,702
April	793,119
May	1,099,175
June	780,944
July	1,008,521
August	1,285,788
September	1,518,100
Total	9,021,807

September shipments were the largest yet recorded and exceed those for the corresponding month of the year 1926 by over 900,000 bbls.

The distribution was as follows:

To the United States— Destination—	Amount (Net Bbls.)
New York	539,289
Baltimore	175,758
Charleston, S. C.	123,305
Total	838,353
To other countries—	
Montreal, Canada	475,462
Halifax, Nova Scotia	157,782
Trieste, Italy	46,502
Total to other countries	679,747

It is worthy of note that 55 per cent of the September exports went to the United States compared with 44 per cent during August and 37 per cent during July.

The shipments were carried in 19 tankers, the average cargo of 80,000 bbls. being about the same as that of the preceding month.

The above shipments were made by the Tropical Oil Co., the only company with commercial production in Colombia today. Their production moves to the coast through the Andian National Corp.'s pipe line whose capacity is approximately 50,000 bbls. a day. The Tropical company also operates a 6,000-bbl.-a-day refinery near the fields but the refined products are entirely for domestic consumption.

The status of the Anglo-Persian Yates' contract still seems to be in doubt pending the application of the recently enacted emergency petroleum bill, copies of which have not yet reached the United States. The future development of Colombia as potentially one of the world's more important sources of petroleum depends entirely on this legislation.

Exploration in Bolivia

In Bolivia, in the departments of Tarija, Chuquisaca, and Santa Cruz the holdings of the Standard Oil Co. (of Bolivia) under exploitation are now stated to amount to 3,746,096 acres. Five wells are being worked successfully on a commercial basis. The boring of seven new wells is proceeding rapidly, and depths ranging from 189 feet to 2,640 feet have already been reached. Four additional sites have been selected by the company, and government sanction has been given to proceed with boring operations.

The development work involved in these undertakings represents a big initial capital outlay, for which American experts, however, anticipate a commensurate return. They estimate Bolivia's resources of petroleum at 2,400,000,000 bbls.

Between Yacuiba and Santa Cruz, in southeastern Bolivia, no fewer than 26 rich petroleum-bearing districts have been discovered, constituting one of the richest oil fields in the world. The deposits in this region are so abundant that the oil frequently oozes through the ground in pools and wells, and is used by the Indians for domestic lighting and cooking.

Among the concessions which have been granted to the British group by the Bolivian government are the oil rights of 10,000,000 acres of land in Tarija, Chuquisaca, and Santa Cruz, adjacent to the holdings of the Standard Oil Co.

Up to the time of the issue of the report no definite steps had been taken to exploit the oil-bearing area under British control, but it is understood that arrangements are being made to develop the property in the near future.

Phillips Concession

Some months ago the Phillips Petroleum Co. obtained an 18-month option on the Peruvian government's reserve petroleum zone in northwestern Peru, south of Paita and west of Piura. It will be remembered that this concession was held and abandoned by the Royal Dutch Shell some time ago. A party of Phillips geologists is now in Peru making a reconnaissance of the territory. It is also understood that one of the large American steel companies is now negotiating with the Peruvian government for the construction of a large refinery to be operated as a government venture similar to the arrangement which now exists in the Argentine.

FRANCE IS COUNTING ON OIL FROM IRAK

(Continued from Page 146)

Co. How will that oil be disposed of? Present Persian production is held in because the company does not wish to spoil the world market. What, then, will it do with the additional Irak oil? And if it markets the latter, what will the Persian government say concerning the Persian oil which is held in and might be marketed? For the Persian government draws a royalty on Persian production and has thus a very real interest in seeing that production mount. Perhaps between now and the time when products of Irak oil are actually being used by the consumer there will be time for the adjustment of many of the problems we have hinted at above. But no one having before him the known facts, and in possession of the knowledge necessary to judge them, can deny that the Irak discovery well is likely to create a new epoch in the oil industry.

AIRPLANE OUTPUT IS DOUBLED THIS YEAR

(Continued from Page 143)

by establishments engaged primarily in the manufacture of airplanes was $24,161,752. This included the value of airplane engines, amounting to $4,080,571, made by the establishments engaged primarily in the manufacture of such engines. The total value of products reported for 1926 by establishments in the aircraft industry proper was $20,081,181, an increase of approximately 60 per cent over the $12,524,719 reported in 1925. These figures are exclusive of instruments, cameras and other accessories.

During the current year, it is estimated that there are 84 manufacturers engaged in the production of airplanes for commercial and private use. This compares with 37 manufacturers in 1926. The largest single producer is expected to turn out this year about 400 planes, selling for around $2,250 each, or about double his production in 1926.

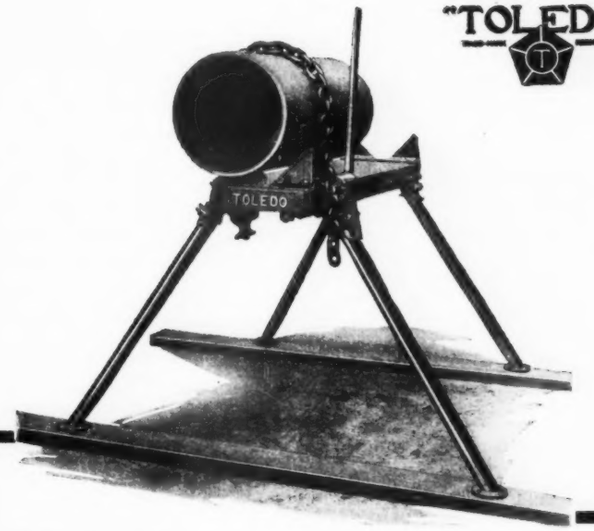
On July 1, 1927, there were 15 mail airways in operation or under contract in the United States. There were advertised nine more mail airways and three nonmail routes. These will serve more than 65,000,000 people with 75 station stops. Each route flies one airplane each way daily, except the New York-Chicago route where the service is doubled. Total airway mileage is expected to be more than 11,000 by the end of 1927.

The year 1927 was marked by the passage of the Government from the field of commercial aviation, when the Transcontinental air mail route, operated by the Post Office Department, was turned over to private contractors.

Air Mail Growing

In the first half of 1927, miles flown on schedule by air mail contractors

"TOLEDO"



Now—

YOU CAN HOLD LARGE PIPE EASILY—

—With a "TOLEDO" No. 9 Portable Work Bench and Chain Vise.

You will find it just right for holding 4½" to 12" pipe when you wish to cut or thread it or make up flanges and fittings. It is very strong and rigid and is made to be fastened to the floor or to skids as illustrated.

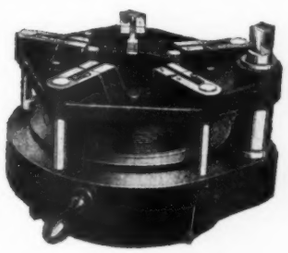
The Chain Vise is of a special design, being built as a part of the bench, and only a part turn of the lever tightens the chain and firmly holds the pipe. Very quick and positive in operation. The table top is regularly furnished 4 ft. long and 1 ft. wide, but can be supplied in any length at extra cost on special order. It is equipped with a set of hardened steel jaws that may be readily replaced. A suitable pipe rest attached to the rear end of the table, supports the longer lengths of pipe.

You will find this work bench practically indestructible and will give years of satisfactory service. Every gang of pipe workers needs one of these new benches.

"Toledo" No. 9 Work Bench and Chain Vise, Complete. For 4½" 12" Pipe. Net Price $75.00

[West of Rockies $81.25]
F. O. B. Toledo, O.

—And to Thread Large Pipe



—From 4½" to 8" you will find that the "TOLEDO" No. 3 Threading Device will do the work easily and quickly anywhere the pipe may happen to be, and you can cut the thread without trouble. It's specified by oil operators who know.

THE TOLEDO PIPE THREADING MACHINE CO. TOLEDO, OHIO

New York Office, 72 Lafayette St.

totaled 1,399,720, compared with 1,948,144 miles in the full year 1926. Total mail carried was 320,212 pounds, compared with 377,206 pounds in the full year of 1926.

A comparative table showing available statistics on air mail flying in the first six months of 1927 and the full year 1926 follows:

	6 mos.to June 30,'27	Full yr. 1926
Aver. income per lb. mail carried	$2.41	$2.03
Aver. income from mail per airplane mile	$ .55	$ .39
Miles flown by contractors on schedule	1,399,720	1,948,144
Mail carried, lbs.	320,212	377,206

In the first six months of 1927 air mail poundage showed an increase in every month but one. The following table shows total pounds carried monthly:

January, 1927	79,259
February	87,088
March	107,504
April	107,017
May	110,253
June	130,115

Airway operators in the first six months of 1927, including those in the post office, completed 4,587 out of 5,272 trips scheduled, indicating an operating efficiency of 87 per cent. Of the 5,272 trips scheduled, 179 were not started, and 506 were uncompleted. Weather and darkness were the causes of 623 out of 685 failures to complete trips.

Lighting Airways

The economical use of airplanes demands flying by night as well as by day, and in all weathers and seasons. It is the purpose of the Department of Commerce, under the Air Commerce Act of 1926, to furnish air traffic aids which will result in the greatest degree of efficiency.

As of June 30, 1927, there were 4,121 miles of lighted airways in the United States. This includes 2,041 miles previously lighted by the Post Office Department. At the close of the fiscal year ending June 30, 1928, it is expected that an additional 3,398 miles will be lighted.

It is estimated that there were on June 30, last, 864 municipal, commercial, or private airports, Departments of Commerce intermediate fields, and private, unimproved but permanent, landing fields in the United States. Many of these were reconstructed or proposed for development in accordance with standards suggested by the Department of Commerce. In addition, airports of one grade or another were under discussion in 144 cities. It is estimated that by June 30, 1928, there will be 1,000 more or less developed airports in the United States, most of them municipal, either in fact or in practice.

Total volume of civil flying in the United States in the first six months of 1927 is reported by the Department of Commerce as follows:

	Miles	Passgs. (for hire or free)
Scheduled flying by airway operators	2,642,364	1,891
Miscellaneous flying by airway operators	362,249	8,305
Air service operators	9,373,320	385,450
Total	12,377,933	395,646

TREND TO LEGISLATIVE CONTROL OF PETROLEUM

(Continued from Page 108)

glo Persian company in which the British government controls at least 40 per cent of the capital stock should not be lost sight of.

Brazil has a bill now pending in congress to clarify the amendment to the constitution adopted in 1926, which declared all mineral rights to be the property of the nation. Included in this bill are a number of regulations governing petroleum exploration and development.

Tariff Discriminations

In the brief outline as given above no mention has been made of the innumerable restrictions placed on the oil trade abroad by means of special tariff discriminations and the multitudinous variety of taxes on production, storage, sales and consumption.

The British fields of Persia, Mesopotamia and India, and the British Dutch fields of the Dutch East Indies are operated under what might be termed a "passive nationalization" in that development by nationals other than British or Dutch is practically prohibited. These conditions are commonly accepted as ideal for efficiency of operations by reason of the complete absence of competition. Yet under these conditions, entirely lacking in the natural stimuli of aggressive competition, we find excessive costs, refining inefficiency and political privilege, all resulting in a cost of production in excess of that existing in the United States.

Without exception every foreign example of a government in the petroleum industry has resulted in an abnormal and uneconomic development of the industry itself and no corresponding benefits to the governments concerned. Where price reductions have resulted from the exercise of monopolies the public treasury foots the bill. Retarded national progress and international enmities have been the immediate, direct and only results of all such governmental action.

STUDY ALTERNATIVE MOTOR FUELS ABROAD

(Continued from Page 104)

prescribed distance. A generator carried on the car and connected to the engine by a flexible pipe supplied the necessary gas which was produced by the action of water on calcium carbide. Acetylene gas requires a special very low compression engine against the tendency today to higher compression engines and, consequently its use as a fuel is not expected to spread. Producer gas calls for a cumbersome apparatus which precludes its use on other than commercial vehicles.

Ethyl and Methyl Alcohol

Among the natural liquid fuels proposed as gasoline substitutes in France are ethyl and methyl alcohol. The French law of 1923 obliges gasoline importers to acquire a quantity of alcohol representing at least 10 per cent of the quantity of gasoline passed through the customs by them in the preceding month. The French government has never been able to manufacture the quantity of alcohol called for by this law and such quantities as have been sold to the gasoline importers are immediately sold at a loss and this loss passed on to the gasoline-consuming public.

The difficulties of utilizing alcohol mixtures as fuels in the present-day internal combustion engines are too well-known to call for further comment. One interesting alcohol blend called "cosmoline," composed of alcohol, 60 per cent; naphthalene oil, 30 per cent; and a solvent, 10 per cent, the latter a mixture of cresol, nitro+benzine, benzol and crystallizable benzine is utilized immediately in all gasoline engines without any modification to the latter. This fuel is difficult to ignite in the open air and can easily be extinguished by throwing water on it. The fuel also has lubricating properties.

"Ketol"

Another interesting French fuel is called "ketol." This substance is a powerful solvent and possesses a remarkable power of miscibility. In the recent fuels competition one car was run on pure ketol, and the other on a mixture of 4 parts of 80-degree alcohol to 1 part of ketol. No transformation was made to the engines and the carburetor jet was the same as that used for gasoline. The manufacture of ketol, on an industrial basis, has only just begun and its price of 10 francs per kilo excludes its competition with gasoline.

It should be noted in passing that while the French give a tremendous amount of publicity to the results of their experiments in attempting to develop gasoline substitutes, no appreciable commercial use is being made of these substitutes and the gasoline consumption steadily increases. It is also interesting to note that almost all experiments with gasoline substitutes are made with internal combustion engines designed for the use of gasoline as a fuel.

Experiments at Budapest

A recent report from Budapest, Hungary, states that experiments are now in progress at the Joseph Technical University of Budapest in connection with the use of a 10 per cent alcohol gasoline mixture in a specially constructed motor. In this "Kund motor" the gasoline and alcohol are kept in separate tanks and have separate carburetors, meeting only after vaporization. The two carburetors are actuated by a governor so that they alternately feed the motor according to the varying load, a heavy load requiring a larger proportion of alcohol. One of the advantages claimed for this system is that alcohol gasoline mixtures stand a higher compression than pure gasoline without causing the motor to knock. It is stated that laboratory experiments have shown that up to 70 per cent ordinary unrefined alcohol can be used with this motor, and that at the last tractor exhibition held at Nagykartal such a motor ran with 97 per cent refined alcohol and functioned perfectly.

New Fuel in Brazil

A new fuel has recently appeared in Brazil, said to be made by combining alcohol and ether, both made from sugar cane, with a small mixture of castor oil for lubricating purposes. This fuel differs from local predecessors in the use of ether; former efforts having been directed mostly toward producing higher test alcohols. The government of the State of Pernambuco has taken a considerable interest in this new product, which has gained much popular favor under the name of Usga, representing the initials of the name and address of the sugar mill where it was developed.

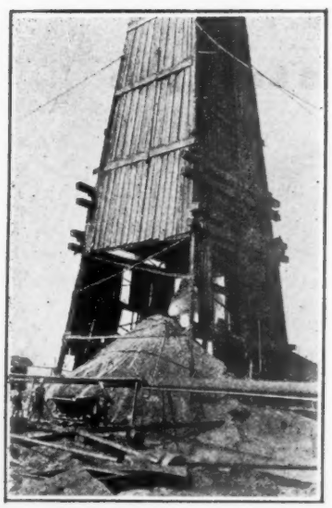
Czechoslovakian Mixtures

Two gasoline substitutes with alcohol bases have been reported from Czechoslovakia. One is a mixture of alcohol, gasoline and naphthaline, with alcohol the chief ingredient. The other substance, known commercially as "dynalkol," is a combination of benzol and alcohol in the proportion of 60 parts benzol to 40 parts alcohol, to which about 1 per cent of naphthaline, 1 per cent of tetraline, or 5 per cent of ether has been added. This fuel is said to have been employed for military and other government services for some time as a substitute for gasoline, and research in regard to its production and properties has been carried out under the auspices of the Czechoslovak War Ministry. The results of this research are said to have shown that dynalkol can be successfully used for all purposes for which gasoline is used, and on account of its lower price as compared with gasoline its consumption may increase appreciably. It is estimated that under existing conditions the quantity of dynalkol that could be produced from domestic sources would be sufficient to supply about half the requirements of the country for motor fuel. The present main source of alcohol in the country is from potatoes.

South Africa, Too

A large number of gasoline substitutes have been reported from South Africa, only one of which, however, appears to have been used on a commercial scale. This product, which is known as "Natalite," is an alcohol fuel manufactured from waste materials resulting from the manufacture of sugar. The producers claim that their product is 90 per cent efficient compared with gasoline. How-

BLOWOUT IN RUMANIA

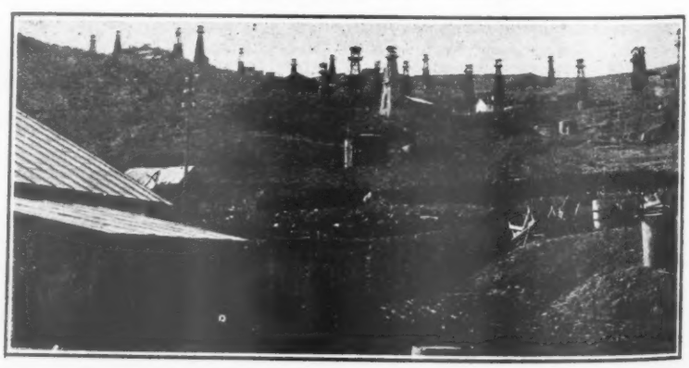


Well No. 59, Baicoi Field, Rumania. While being deepened, this well made a violent eruption and threw out many tons of sand as shown in conical form underneath the rig.

OLD RUMANIAN WELL

One of the oldest wells in Rumania. It was drilled in 1908 and is still producing about 25 bbls. daily.

ARBANASHI FIELD IN RUMANIA



Several of these wells have been producing for 20 years.

The Wildcatter can afford to take his time ~

MILES from the nearest drillings, the wildcatter can afford to take his time. He may be months about completing his well and still be sure of striking oil (if any) before competitors.

But in production drilling the situation is different. Here every minute counts—and the man who reaches the pay sand first will reap a golden harvest. Production drilling makes great demands for speed and power—demands which only *steam* drilling engines can meet.

Ajax Drilling Engines deliver from three to six times the horsepower of the best gas engines. Speedy and flexible, as well as rugged and dependable, they make appreciable savings in drilling time.

Made by
AJAX IRON WORKS
Corry, Pa.

DISTRIBUTED BY
THE NATIONAL SUPPLY COMPANIES
NSCO

In every oil field

Because they deliver 150 to 240 H.P. Ajax Steam Drilling Engines save time on every operation that requires extra power.

The single Ajax for cable operations and the Ideal-Ajax twin (400 H.P.) for rotary drilling have given the industry new standards of drilling engine performance.

AJAX ENGINES

IDEAL-AJAX *STEAM* DRILLING ENGINES DELIVER *POWER-PLUS*

AJAX ENGINES

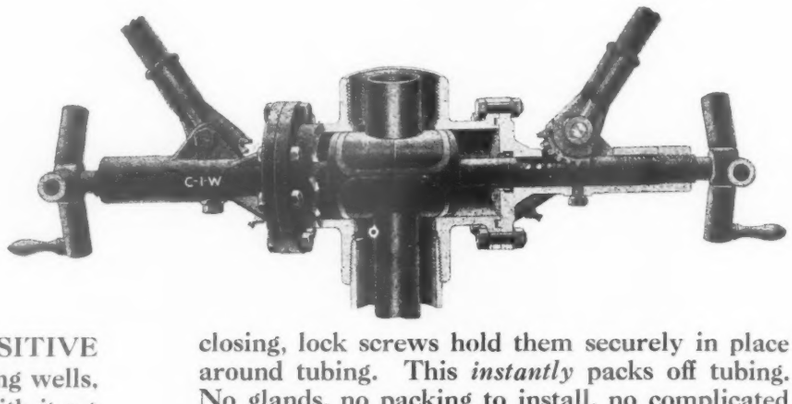
Dangerous Operations Lose Their "DANGER" on Wells Equipped With the Correct Type of

C. I. W. Blowout Preventer

Study the Design of our

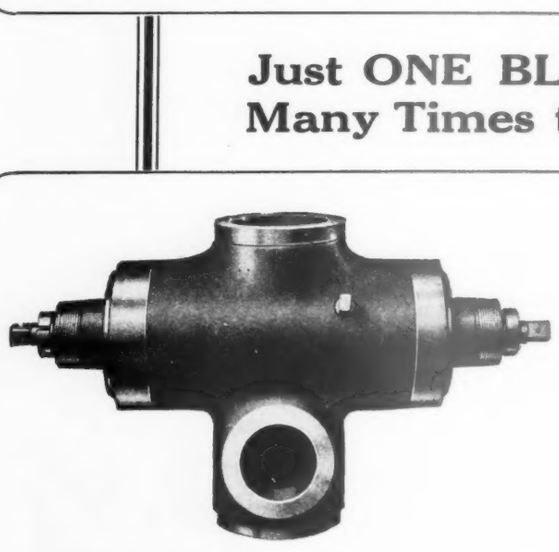
Tubing Control Head and Blowout Preventer

(Guaranteed to 750 lbs.)



THIS NEW TOOL GIVES POSITIVE CONTROL on flowing wells, pumping wells, gas wells, or gas and air-lift hookups. With it set at the top of your casing, you can run tubing into well UNDER PRESSURE—SAFELY. Rams are quickly controlled by lever jacks, and after closing, lock screws hold them securely in place around tubing. This *instantly* packs off tubing. No glands, no packing to install, no complicated set up to make. It is easy to install, and eliminates tubing spider and slips. Above all; you are SAFE at ALL TIMES with this tool, regardless of the recovery method employed.

Just ONE BLOWOUT Will Cost You Many Times the Price of a Preventer



Our Well-Known High-Pressure

Blowout Preventer

(Tested and Guaranteed to Hold 2000 Lbs.)

CONTROLLED outside the derrick floor, this big burly preventer is intended for use in high pressure areas where wells and lives are often lost. Drill through it, and when high pressure gas pockets are encountered, quickly clamp the rams securely around the drill stem and save costly drilling equipment. When used in place of the ordinary cross in your manifold, production can be made either above or below the preventer; and drill stem (with which liner was set) can remain suspended in the hole on Preventer rams.

Designed without gaskets, lead, babbitts or bolts to give way under pressure; this model is practically "fool proof."

Write TODAY for Literature and Prices—No Obligations

Cameron Iron Works

Manufacturers of
OIL WELL SUPPLIES AND FISHING TOOLS

Houston, Texas

ever, investigations from trade sources would lead one to indicate that this figure is rated somewhat high and that 75 to 85 per cent would be a closer figure. For example, in a reliability run, a certain make of car secured a mileage of 20.35 miles per imperial gallon, whereas with gasoline it would probably have secured 25 to 26 miles. With regard to its effect on internal combustion engines, it may be stated generally that there is no special effect other than that produced by gasoline or petrol. However, it sets up a certain action on carburetors and will in some cases entirely eat away the carburetor jacket. In the case of cars with carburetors having a cork float it is necessary to have the float covered with a special solution of lue and formalin in order to withstand the action of the spirit.

Philippines Use Alcohol

Alcohol of 180 to 190 proof has been used for several years in the Philippines as a fuel for internal combustion engines. However, the demand for it has not grown, as the product obtainable, being practically a pure alcohol, did not readily start a cold engine and its use proved injurious to the motor parts. The Philippine Motor Alcohol Corp. was incorporated in August, 1922, at Manila, for the purpose of manufacturing motor alcohol and other grades of alcohol from molasses obtained from the sugar mills of these islands. The motor fuel marketed by this company is made after a formula patented some years ago by J. C. Foster, a chemist with the Main Agriculture Co., of Maia Maui, Hawaii. It calls for the following ingredients: Ethyl alcohol, 55.5 per cent; sulphuric ether, 42 per cent; kerosene, 2 per cent; and pyridin, 0.5 per cent. The pyridin may be replaced by 1 per cent aniline oil.

Sulphite in Sweden

The sulphite alcohol production in Sweden received a tremendous impetus during the war, when the supply of gasoline was steadily decreased and suddenly cut off with the initiation of submarine war. All motor owners were placed in a very critical situation, and the demand for sulphite spirit as a motor fuel rose to an unexpected extent. Only four factories were then in operation, with a total capacity of 4,000,000 liters of spirit yearly, and on the encouragement of the state authorities a development took place which in a few years resulted in a total number of factories of 22, with a yearly productive capacity of about 22,000,000 liters. The capital invested in the industry is estimated at no less than 20,000,000 kroner (about $5,500,000). The spirit was generally sold and used unmixed, but admixtures with ethyl alcohol, turpentine, and light char distillates of several kinds were also brought on the market and used in gasoline motors without any special difficulty, after small adjustments had been made in certain parts of the motor.

England, Italy and Germany have attempted to use alcohol as a motor fuel during the past few years with little or no success. Little attention is now given to this subject in England and Italy, while Germany has turned to benzol blends and synthetic oils. The alcohol monopoly in Poland is attempting to arouse interest in alcohol fuels but is immediately faced with the opposition of the Polish petroleum industry which has not been in a prosperous condition for many years. Cuba and Porto Rico use small quantities of alcohol blends for motor fuels. The decreasing price in gasoline contrasted with the increasing price of molasses, the common material in nearby tropical and semitropical countries, has seriously mitigated against the increased production in these countries of alcohol as a gasoline substitute.

CANADA'S PRODUCTION SHOWING AN INCREASE

Crude petroleum production in Canada during 1926 showed an encouraging increase over the total for the preceding year. The year's production amounted to 264,444 bbls. valued at $1,311,665; in 1925 the total was 332,001 bbls. worth $1,250,705. Alberta's production, mainly from the Royalite No. 4 wet-gas well, topped the high mark of 1925, reaching a new record of 216,050 bbls. A decline was shown in the Ontario production for the year when 137,850 bbls. were produced. Another feature of considerable worth was the proportionately large increase in the New Brunswick production, the 1926 figures being 10,544 bbls. as against 5,376 bbls. in the preceding year. July 1, 1925, marked the cessation of payment by the Federal Government of bounty on crude petroleum produced in Canada.

Output of petroleum products from Canadian plants in 1926 amounted in value to $71,196,311, an increase of 20.5 million dollars over the corresponding figure of 1925, according to a statement just issued by the Dominion Bureau of Statistics at Ottawa. This figure includes the output of petroleum refineries valued at $70,570,240 and the production of plants compounding lubricating oils and greases worth $626,071.

Canadian Refineries

Reports were received from 23 plants of which 17 were oil refineries and 6 engaged in compounding lubricating oils and greases. Capital employed was reported at $57,178,125; the average number of employes was 3,753 and payments for salaries and wages totaled $5,892,399. Raw materials cost $51,172,159 and the value added by manufacturing amounted to $20,024,152.

Of the 17 refineries in operation 5 were in Alberta, 4 in Ontario, 3 in British Columbia, 2 in Quebec and 1 in each of Saskatchewan, Manitoba and Nova Scotia; and of the 6 plants producing lubricating oils, greases, etc., 3 were in Ontario and 3 in Quebec.

Production of gasoline during the year totaled 221,146,704 gallons of which 69,839,231 gallons were obtained by the cracking processes. Final output of fuel and gas oils totaled 228,474,212 gallons and of this total 38,473,341 gallons were used for fuel purposes in the reporting plants and 190,000,871 gallons were made for sale. It is estimated that a further 197,470,904 gallons of fuel and gas oils were used in the cracking process.

Petroleum and its products imported into Canada during 1926 were valued at $52,063,686, an increase of $8,221,259 over the 1925 import value of $43,842,427. Gasoline importations were recorded at 82,839,688 gallons invoiced at $11,958,795.

Crude petroleum amounting to 244,217 bbls. valued at $776,824, was produced in Canada during the half year under review. In the corresponding period of 1926 the production was 173,880 bbls., valued at $697,551. Ontario producers received an average price of $2.10 a barrel; those in Alberta $3.76, and in New Brunswick, $2.07. The Royalite well, No. 4, a wet-gas producer in the Turner Valley Field, maintained its record average production of over 500 bbls. of crude naphtha per day.

Production of Crude Petroleum in Canada, 1925, 1926 and January 1, to June 30, 1927

	1925	1926	Jan.1 to June 30, 1927
New Brunswick	5,376	10,544	15,598
Ontario, Petrolia & Enniskillen	52,481	56,170	28,089
Oil Springs	39,137	38,350	18,642
Moore Twp.	8,195	2,438	1,002
Sarnia Twp.	1,905	1,890	919
Plympton Twp.	1,424	1,047	1,011
Bothwell	26,243	25,382	12,497
West Dover	1,820	959	147
Raleigh Twp.	887	676	276
Dutton	146	....	....
Onondaga	81	555	361
Moza Twp.	8,397	7,868	3,654
Thamesville	289	2,376	2,440
Dunwich	855	139	139
Romney Twp.	1,235	....	....
Euphemia	39	....	....
Ttl. Ontario	142,134	137,850	69,177
Alberta	183,491	216,050	159,442
Canada	332,001	364,444	244,217

STUDYING CORRODING ACTION OF SOILS

(Continued from Page 50)

corrosion test in which the pulverized soil and iron are intimately mixed and in presence of ferrous hydroxide. By starting with one gram of powdered iron, weighed to a tenth of a milligram and

Wanted
To Buy Quick
Two Used Rotary
Drilling Rigs

Must be fairly heavy rigs and capable of making 3500 to 4000 foot wells. Condition of rigs must be excellent throughout. Give price and complete detailed information in letter address to

Post Office Box 734
Eldorado, Arkansas

FOREIGN BUYERS

We solicit the business of reputable concerns for oil well pumping specialties: packaged balls and seats, working barrels, pumps and valves of all types, engineered to fit specific conditions.

Our production is large; we have been serving American production companies for a quarter of a century. Our reputation is founded on the performance, the long life and the price of our products.

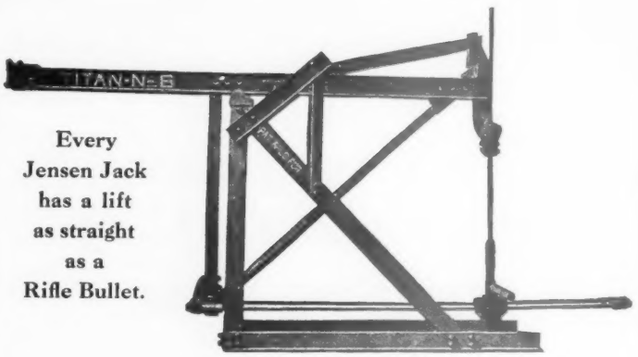
We solicit your inquiries.

THE CHARLES N. HOUGH MFG. CO.
Franklin, Penna.

W. Tarkington,
Sales Representative
1724 Ruth Street,
Houston, Texas

C. O. Shumaker,
Sales Representative
1143 South Xanthus St.,
Tulsa, Okla.

Products That Cut Down Your Underground Overhead



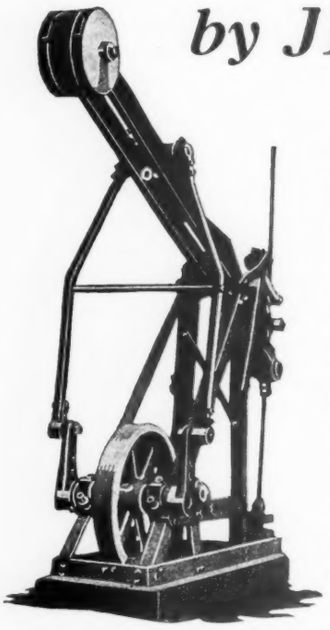
Every Jensen Jack has a lift as straight as a Rifle Bullet.

Better Pumping Records Around the World

WE started out to make Pumping Jacks for American producers, but the fact that you can install them and forget them caught the fancy of men in foreign fields and the demand has spread around the world.

If it costs too much to get oil out of the ground, men can't make a profit at present prices. Jensen Jacks help. They absolutely do away with much of the usual trouble with rods and stuffing box and related equipment. They are easy to pull, they have a straight lift and nothing ever happens to put them out of commission. There is a Jensen Jack for every well and we invite correspondence from men abroad who feel themselves more or less harassed with pumping troubles.

Pumping Unit by JENSEN



IF YOU like Jensen Jacks—and find an oil man who doesn't!—you'll like this Jensen Straight Lift Pumping Unit. Operated with either an electric motor or gas engine. Has an absolutely straight, vibrationless stroke of about 28″. Lasts indefinitely by reason of sturdy construction and ample provision for lubrication. Characteristic Jensen dependability.

Write for complete information and catalog of Jensen Pumping Equipment.

JENSEN BROTHERS MFG. CO.
Coffeyville, Kans., U. S. A.
All Frick-Reid Stores sell Jensen Jacks
Export Office: 136 Liberty St., New York City

mixed with about 5 grams of soil, the amount of metallic iron present at the end of a test, may be determined by treating with an excess of mercuric chloride and boiling for several minutes. The sample may be transferred to a calibrated flask (500 ml.) which is cooled and filled to the mark. An aliquot portion (100 ml.) may then be titrated with tenth-normal potassium permanganate in presence of manganous sulphate and phosphoric acid. The amount of corroded iron can then be calculated as the difference between the iron added to the soil and the amount found by titration. Possibility of error due to action of mercuric chloride on ferrous hydroxide or oxide was recognized. Tests showed, however, that the action of mercuric chloride on ferrous hydroxide is negligible under these conditions, so that the method appears satisfactory for determining the metallic-iron content of the soil-iron mixtures.

Since according to theory, the rate of hydrogen evolution may be expected to depend upon the hydrogen-ion concentration of the solution in contact with the iron, considerable effort was made to correlate these two quantities, but other factors mask any such relation. In some cases, such as Susquehanna clay having a pH of 4.4 the rate of evolution is very high as might be expected, but in the case of the Sassafras gravelly sandy loam having a pH of 4.6, the rate of evolution is comparable with that in distilled water. No doubt the "buffer" effect of the fine colloidal matter in a loam or clay assists in maintaining the pH at a sufficiently low value to promote the rate of reaction. During the evolution of hydrogen the pH values tend to increase. This would be expected, particularly in the absence of air and along with the formation of ferrous hydroxide.

While the rate of evolution of hydrogen decreases after a few weeks, it is not yet known whether this decrease is due to the higher pH value or some other factor.

Measuring Magnetic Flux

For continuously observing the progress of corrosion of iron or steel (in different soils and comparing their corrosiveness) a method involving a measurement of magnetic flux is under investigation. The magnetic flux in a mixture of pulverized iron and soil under the influence of a given magnetizing force should be a function of the amount of uncorroded iron. Preliminary experiments have been made upon mixtures of pulverized cast iron and soil. A diagram of the apparatus[4] used is given in Figure 3. The samples were contained in test tubes

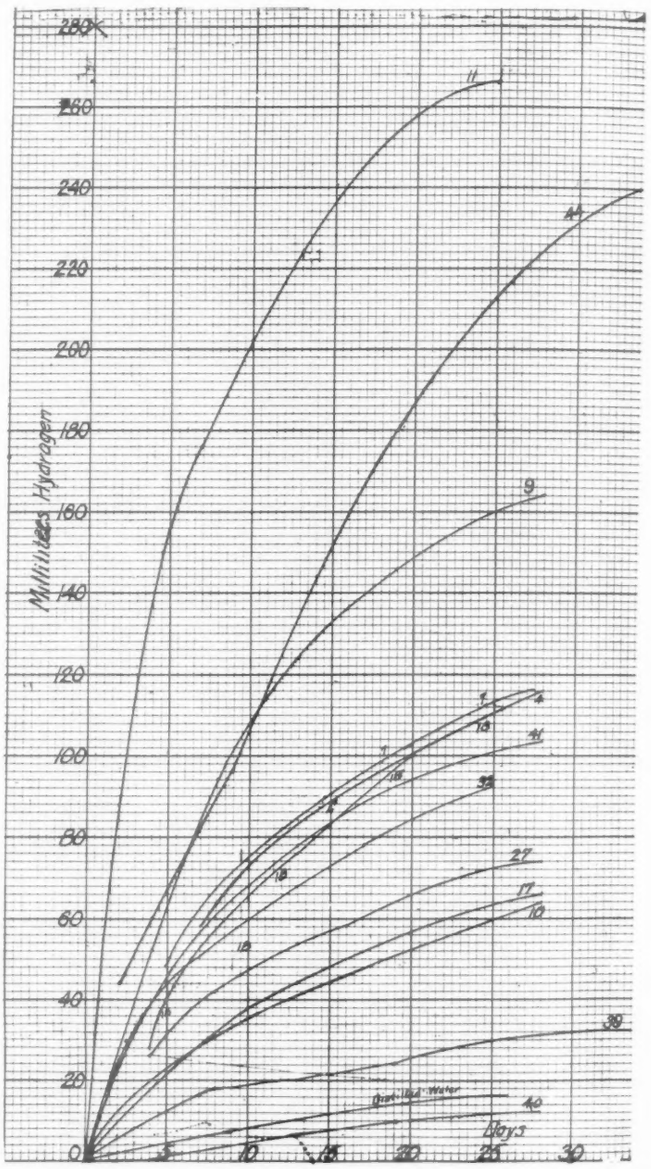


Fig. 2—Hydrogen gas evolved during corrosion of pulverized cast iron by different soils under water (without air supply). Numbers on curves are soil numbers. Test samples consisted of 10 grams each of soil and iron. 401 ml. hydrogen at 760 mm. and 0 degree C. corresponds to 1 gram of iron.

[4]The use of this apparatus was obtained through co-operation with R. L. Sanford, physicist of the Bureau of Standards.

Fishing Tools Drilling Tools

AMERICAN IRON & MACHINE WORKS, INC. · OKLAHOMA CITY ·

ABOVE. American Rock Bit Break-Out Block. Approximate weight 165 pounds. PATENTED.

Another new one— *for the Drilling Industry*

Here's a new one—The American Rock Bit Break-Out Block—the first and only ever offered the drilling industry. Note the illustration to the left.

When the American organization started in to perfect this new tool for the drilling industry—they sought to make it practical from every standpoint and this they did.

The American Rock Bit Break-Out Block is designed to hold the bit firmly in place while breaking the joints. This means speed and safety for the men on the rig.

Small drain holes in the bottom of the block let the water and slush drain back.

This tool is a time saver—and a protector against loosing or damaging rock bits while breaking joints.

Scores of the leading contractors are already using this marvelous break-out block. Examine it yourself at the nearest supply store. The standard size will fit any rotary table for the 11 inch rock bit. Bushings are obtainable if smaller size bits are used.

Details on the American Rock Bit Break-Out Block are presented in the American Catalog of Oil Field Equipment. Write for it. Look over the list of American Oil Field Equipment listed below. Sold by the leading supply companies the world over.

American Iron and Machine Works, Inc.

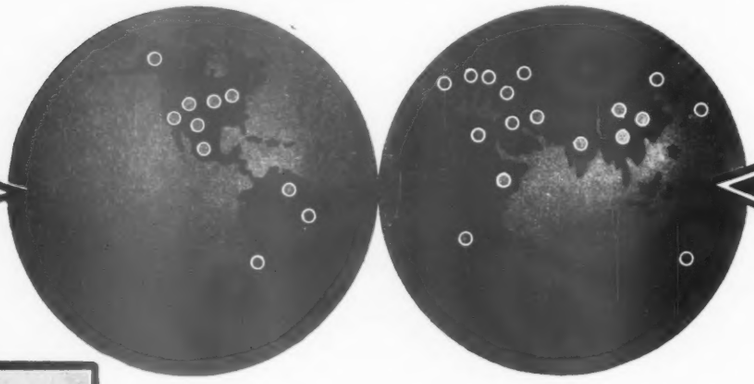
MANUFACTURERS OF OIL FIELD EQUIPMENT

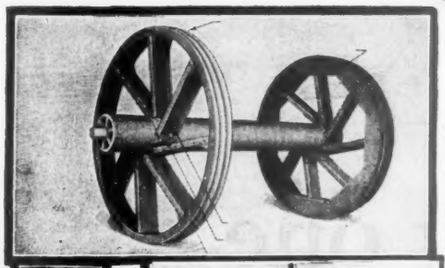
OKLAHOMA CITY, OKLAHOMA

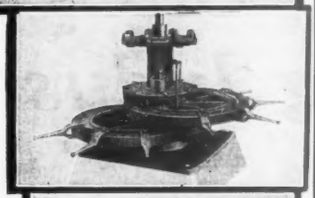
American Oil Field Equipment

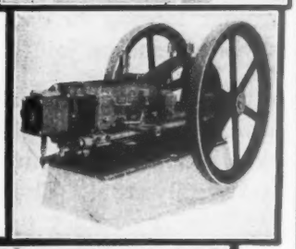
American Releasing and Circulating Overshots
American Rock Bit Wrenches
American Milling Shoes
American Flexible Couplings for Rock Bit Lubricators
American Steel Tool Houses
American Forged Steel Wall Hooks
American Rock Bit Breakout Blocks
American Rock Bit Cone Fishing Sockets
American Paraffin Bits
American Female Die Nipples
American Tapered Taps
American Forged Steel Subs
American Rotary Shoes
American Cone Fishing Baskets
American Steam Lubricators
American Combination Reverse and Throttle Levers
American Side Tracking Mills
American Rock Bit Wash Pipe Attachments
American Rotary Milling Tools
American Myracle Sucker Rod Sockets
American Surface Bit Attachments for Rock Bits
American Drill Pipe Float Joints

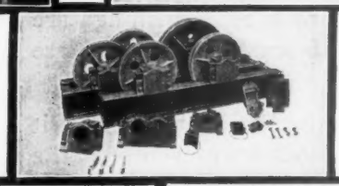
WHERE EVER there is oil
THE MARION LINE
of OILWELL MACHINERY gets it to the surface at less cost

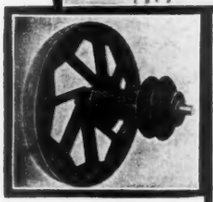


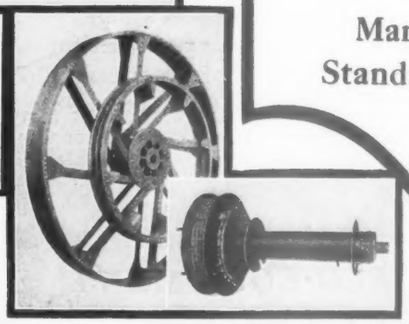












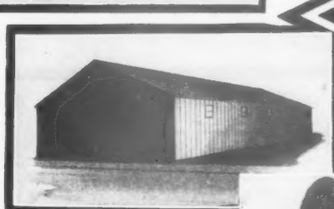
New Equipment

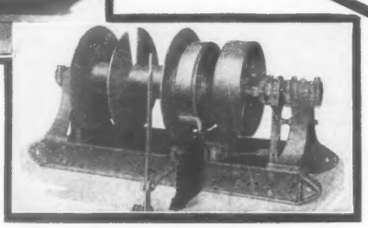
To the well known oil field machinery and equipment which we have been manufacturing, we have added within the past few months the following:—

New Heavy Duty Band Wheel Power with Forced Feed System. Marion Super-Service Sucker Rod. Mariondyer Speed Spool. Mitchell Steel Pitman. Roller Bearing Crown Block Pulleys. Marion Heavy Duty Sand Reel. 48" Band Wheel Flange. New Steel Pumper. Sealpack Pump. Straight Line Jack. Adjustable Swings. Heavy Duty Stuffing Box. Marion-McGraw Bronze Bearings. Marion Girder Type Walking Beam. Sucker Rod Hook. And other surface equipment.

Use coupon to let us know what you are particularly interested in, and we shall send you one of our bulletins giving complete description.

Marionize—Metalize
Standardize—Economize





THE MARION LINE

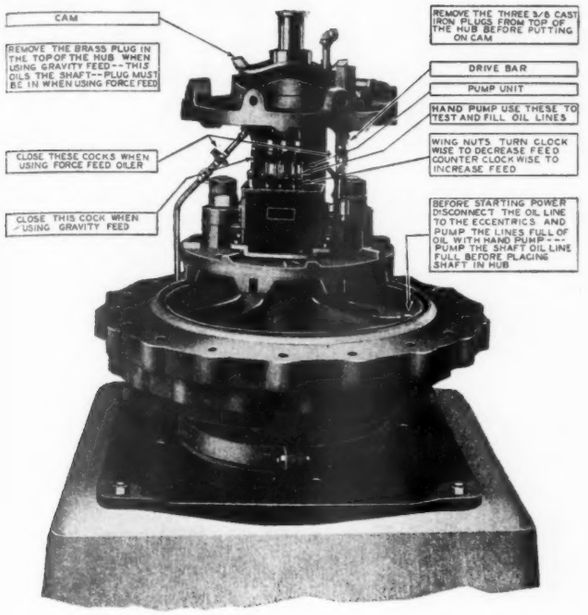
MARION MACHINE, FOUNDRY & SUPPLY CO.,
Marion, Indiana

Gentlemen:

Please send us one of your new Bulletins describing .....

.....

Name .....
City .....
State .....


CAM
REMOVE THE BRASS PLUG IN THE TOP OF THE HUB WHEN USING GRAVITY FEED -- THIS OILS THE SHAFT -- PLUG MUST BE IN WHEN USING FORCE FEED
CLOSE THESE COCKS WHEN USING FORCE FEED OILER
CLOSE THIS COCK WHEN USING GRAVITY FEED
REMOVE THE THREE 3/8 CAST IRON PLUGS FROM TOP OF THE HUB BEFORE PUTTING ON CAM
DRIVE BAR
PUMP UNIT
HAND PUMP USE THESE TO TEST AND FILL OIL LINES
WING NUTS TURN CLOCK WISE TO DECREASE FEED COUNTER CLOCK WISE TO INCREASE FEED
BEFORE STARTING POWER DISCONNECT THE OIL LINE TO THE ECCENTRICS AND PUMP THE LINES FULL OF OIL WITH HAND PUMP --- PUMP THE SHAFT OIL LINE FULL BEFORE PLACING SHAFT IN HUB

Marion Heavy Duty Band Wheel Power With Force Feed Oiling System

THE Band Wheel is constructed with two sets of angle drive spokes and two sets of round spokes to true up the wheel. It cannot break or distort with any load the belt can pull. All shaft bearings are bronze bushed and are easily removed and new bushings put in place. The thrust bearings are heavy bronze plates and run in a bath of oil. The powers are fitted with a Force Feed Oiling System that puts the oil to each eccentric and to the shaft under pressure—so that the oiling is positive. Only clean new oil is used. No dirty oil reaches the bearings.

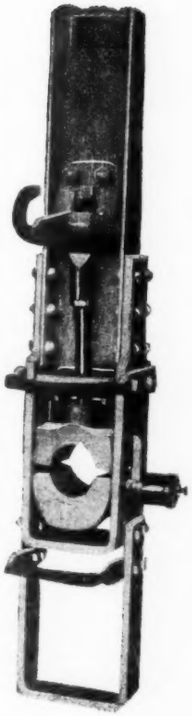
These Powers are built in two sizes:

No. 999—Heavy Duty Power—18" stroke, double eccentric—16 ft., 18 ft. or 20 ft. band wheel—with 15" face. **No. 2424**—Extra Heavy Duty Power with 24" stroke—double eccentric, 24 ft. band wheel with 18" face

Write for Bulletin No. 122A

Mariondyer Speed Spool

The Mariondyer bull wheel speed attachment consists of a two diameter drum that is attached to the bull wheel shaft to increase the diameter of the shaft to approximately one and one-half to two times the shaft diameter. Its purpose is to speed up the pulling of tubing and rods. The two halves are hinged together on one side and are handled by means of a chain that automatically opens the two halves so they drop over shaft.



Marion Super Service Sucker Rod

The steel used in the Marion Super-Service Sucker Rods has the physical and chemical properties which enables it to withstand the repeated application of very heavy loads—having a yield point MORE THAN TWICE THAT OF MILD STEEL AND A RESISTANCE TO FATIGUE OF MORE THAN TWICE that of mild steel such as used in sucker rods.

Manufactured according to A. P. I. specifications in the following dimensions.

	—5/8"—	—3/4"—	—7/8"—
Length of Pin	1-1/8"	1-3/8"	1-3/8"
O. D. of Pin	1-5/16"	1-1/16"	1-3/16"
Threads per in.	10	10	10
O. D. of Coupling	1-1/2"	1-5/8"	1-13/16"
Width of wrench square	1"	1"	1"
O. D. of shoulder for elevator	1-1/4"	1-3/8"	1-1/2"
Length of Coupling	4"	4"	1"

Write for Bulletin 168A.

Mitchell Steel Pitman

In the Mitchell steel pitman the box is split and the lower half is made of cast steel with two large trunion pins that rest in holes in the steel yoke which forms the lower end of the pitman.

The bearing is lined with babbitt and is provided with a heavy compression grease cup screwed into one of the trunions.

The cap is made of semi-steel, babbitted and attached with a ball joint to the connecting rod.

The connecting rod has a screw adjustment for length and is attached so proper bearing can be put on the wrist pin.

The eccentric lever is a steel block. When in the down position the cap is locked on the pin. When raised to the upper position, the cap lifts about three-fourths of an inch, permitting the pitman to swing off the wrist pin freely.

Two handles are provided for lifting the pitman on and off.

The foot attached to the bottom of the pitman keeps it up to a convenient height.

The stirrup is adjustable for length at the top of the pitman to take care of any variation in rigs.

Marion Machine, Foundry & Supply Company

Marion, Indiana

"THE CONTROL HEAD" and "THE DOUBLE ROLLER OIL SAVER"

PATENTED

The Answer

-to the Query-"which is the Better Control Equipment?" comes from all over the world

Control at the casinghead when wells are drilled in is a vital precaution against needless waste of oil, and a safeguard to workmen around the derrick from stray gas and its imminent hazards. Everyone agrees that "painting the derrick" is a crude practice that belongs to the past. But what control equipment should be used has needlessly puzzled some operators who are not in possession of the complete facts concerning control-head operation.

Throughout America, and in practically every foreign country producing oil, leading producing companies have settled this question emphatically by equipping their wells with *THE* CONTROL HEAD, and *THE* DOUBLE ROLLER OIL SAVER. In more than a dozen languages *THE* CONTROL HEAD and *THE* DOUBLE ROLLER OIL SAVER are called "Standard Equipment for Modern Oil Wells."

THE CONTROL HEAD is made in all sizes to meet any requirement of flow or pressure. Instantly controls the flow, should the well suddenly blow itself in even while tools or bailer are in the hole. During drilling operations there is no more interference from *THE* CONTROL HEAD than if it were not on the well. Flowing wells are safe to shoot, if equipped with *THE* CONTROL HEAD. This modern head provides absolute safety in curbing wild wells.

THE DOUBLE ROLLER OIL SAVER prevents loss of oil or gas that would otherwise escape while drilling or swabbing a well. It fits in the control head and tightly around the drilling line. Packing may be renewed without removing, or allowing any oil or gas to be lost. Indispensable to flowing wells.

With *THE* CONTROL HEAD and *THE* DOUBLE ROLLER OIL SAVER on your well, every drop of oil and every foot of gas are tamed and turned into the line.

The Oil Well Improvements Co.

Sole Manufacturers

Tulsa . . . . . Oklahoma

Standard Equipment on modern oil wells

which were placed in a solenoid (S) through which a magnetizing current of a definite value was passed. A test coil (t) surrounding the specimen was connected through the secondary of a variable mutual inductance (M) to a ballistic galvanometer (G). Upon reversal of the magnetizing current, the throw of the ballistic galvanometer is proportional to the magnetic flux in the specimen. The function of the variable mutual inductance is to balance out the flux in the space surrounded by the test coil and not due to the iron. A high sensitivity is thus attained. If desired, the galvanometer can be calibrated by means of the mutual inductance in the customary way. Under a given set of conditions, the amount of metallic iron at any time during the corrosion test should be indicated by the galvanometer deflection. This method permits the measurement of the rate of corrosion without interrupting the process and continuous records over any period of time may be obtained. The laboratory conditions for this test may be made to simulate field conditions in respect to moisture and air and may perhaps be of practical value for comparing the actual corrosiveness of soils.

The chief difficulty in the way of making the magnetic method practicable is the production of a uniform mixture of soil, iron and moisture with a definite degree of compactness.

In conclusion, it is emphasized that the work done up to the present itme has been limited to developing a laboratory technique by which the different factors controlling the rate of soil corrosion may be studied. It is believed that the use of pulverized soil-iron mixtures as suggested here offers an effective method of attacking the problem. It is apparent that before this method of study can be so standardized as to permit comparison of the results of different workers it will be necessary to define more closely the state of division of the iron, and to select one or more typical soils that may be used as comparison standards.

REASON FOR BUYING OIL FROM SOVIET

(Continued from Page 48)

rected against the political issues involved in the acquisition of the Russian oil industry by the present Soviet administration without compensation to the original owners of the properties. This angle of the situation is entirely apart from the economic issues involved.

Dutch-Shell Situation

The Dutch-Shell combine is in a different situation in the Near East and India than Standard Oil of New York or Vacuum Oil. It has production in Rumania and the Dutch East Indies and can supply the Near East and Far East from these fields at prices below those at which American oil can be delivered. The Dutch-Shell, it is argued, does not need Russian oil for these markets.

California oil can compete with that from the Dutch East Indies only in the eastern end of the Far East, including Japan, China and Australia. Neither Vacuum Oil Co. nor Standard Oil Co. of New York have production in Rumania and were unable to buy any there because Rumanian producers were tied up with European orders. The Dutch-Shell combine is the leading producer in Rumania through its subsidiary, Astra Romana. The Anglo-Persian Oil Co. is a heavy producer in Persia, adjacent to India and the near East, and in Rumania. Therefore, American companies face the stiffest kind of competition in south central Europe and the Near East markets from both Dutch-Shell and Anglo-Persian, and it was considered logical from an economic viewpoint to meet this competition with Russian oil.

Since early this year there has been a steady decline in prices of all principal oil products in the Near and Far East. A drop of about 20 per cent in the price of fuel oil in India was reported at about the same time as the Standard Oil-Russia contracts were announced. Gasoline has also been weak. It is estimated that the general level of oil prices is down from 25 per cent to 50 per cent from the peak.

Possibilities of Russian Oil

Official statistics show that despite the Russian oil contracts with the Vacuum Oil Co. and the Standard Oil Co. of New York, Russia is not supplying the south central Europe and Near East markets with as much oil as before the World War. This is because the policy of the Russian oil administration apparently has been to develop sales in Europe so far as possible, a policy the wisdom of which is not clear to many observers. At any rate, the Near East and south central Europe exports amounted to only 374,400 tons in the fiscal year ended October 31, 1927, as against 428,200 tons in the calendar year 1913. Russian business in the territory affected by Standard Oil contracts is therefore shown to be about 87 per cent of normal. In Europe, Russian oil is being marketed on a scale over three times the prewar rate.

The following figures show that exports of Russian oil to various countries in the calendar year 1913 and in the fiscal year ended October 31, 1927, in long tons (figures of the American-Russian Chamber of Commerce):

	1913	1926-7
Belgium	83,100	69,400
England	178,300	381,000
France	112,400	386,100
Italy	16,500	477,600
Western Europe	390,300	1,314,100
Egypt	123,400	152,200
Turkey	149,000	62,900
Others*	155,800	159,300
Near East, etc.	428,200	374,400
Total exports	818,500	1,688,500

*Includes largely south central Europe.

Russian exports of oil have more than doubled over the prewar rate, with the result that petroleum is now said to be Russia's chief export crop.

The future of Russia as a world factor in the oil markets is said to be limited only by the amount of capital available for development, and it is the contention of some, incidentally, that the ambitious program now proposed by the Soviets for development depends on the raising of new funds.

More than $260,000,000, representing 21 per cent of the total allotment of funds to all industries, has been allotted to the Soviet oil industry by the Moscow government during the past five years, in an effort to develop the country's oil resources. It is believed that funds available are largely those received from the sale of oil outside of Russia. The Soviet administration has drawn largely from American firms for its equipment.

Outlook in Europe

The situation as to Russian oil in western Europe is somewhat different than that in south Central Europe and the Near East. Russia is marketing its products in the former territories chiefly through smaller marketing organizations having exclusive rights to handle Russian oil. The possibility that one of the big European marketing groups, such as Standard Oil, Dutch-Shell or Anglo-Persian, might ultimately take over the handling of Russian oil in Europe becomes more and more remote in view of the headway Russia has made without such an arrangement. In addition, there is a gentleman's agreement between the three marketers referred to not to handle Russian oil.

While the quantity of oil marketed in Europe by Russia is important from the latter's viewpoint, it represents a comparatively small factor in the total consumption of Europe, and therefore does not present as serious a problem to competitors as in the markets adjacent to the Russian oil fields.

Three important developments in 1927 with regard to Russian oil marketing in Europe stand out. One is the break between England and Russia, which is said to have reduced Russian oil sales in Great Britain; secondly, is the contract made between the French government and the Soviet for supplying Russian oil to the French navy, despite the French agitation over prewar Russian debts Thirdly, is the Spanish monopoly's evident intention to grant Russia the major portion of the business of supplying it with gasoline, kerosene and fuel oil.

DUTCH-SHELL OUTPUT IN LINE WITH MARKET

Dutch-Shell drilling activity in 1927 was confined mainly to Venezuela, where the Venezuelan Oil Concessions, Ltd., a subsidiary, was active and increased its oil production materially. In other fields, including the Dutch East Indies, little drilling was carried on and production in 1927 is expected to show only a small change from 1926. The output was in line with marketing requirements, with the result that stocks of oil on hand at the close of 1927 in the company's tanks shows no increase over the year preceding.

The Mexican Eagle Oil Co., the Dutch-Shell Mexican subsidiasy, continued drilling in 1927, but on a greatly reduced scale. The company entered the Venezuelan situation for the first time by contracting for a supply of crude oil from the Venezuelan Oil Concessions, Ltd. This is an indication of the decline in Mexican operations.

DEATH OF RICHARD O'GRADY

Richard P. G. O'Grady, oil lease broker, died in Tulsa on December 26, after a long illness. He was 69 years of age. Mr. O'Grady at one time was prominent in politics in Illinois and was political editor of the Chicago Tribune for 10 years. He came to Tulsa about seven years ago.

CALIFORNIA OIL FIELD OPERATIONS FOR NOVEMBER, 1927

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for November amounted to 18,516,467 bbls., an average of 617,216 bbls. per day. This is a decrease of 10,168 bbls. per day under October production.

Total stocks of crude and all products in Pacific Coast territory decreased during the month 354,825 bbls. The total stocks at the end of the month were 139,691,423 bbls. The total stock decrease for 1927, up to November 30, was 5,920,753 bbls.

Fifty-five wells were completed during the month with an initial daily production of 27,980 bbls., compared with 61 wells completed during October with an initial production of 26,101 bbls.

PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons.)

District—	Barrels per Month	Daily Average Nov., 1927	Oct., 1927	Nov., 1926
Kern River	673,602	22,453	19,678	12,318
Mount Poso	3,665	119	85	.....
Round Mountain	1,500	50	23	.....
McKittrick	156,513	5,017	4,922	5,161
Midway-Sunset	2,441,006	81,367	82,602	91,144
Elk Hills	744,170	24,806	25,573	34,569
Lost Hills-Belridge	115,307	3,843	3,959	4,835
Coalinga	575,466	19,182	19,124	19,767
Wheeler Ridge	28,808	960	914	1,103
Watsonville	1,725	58	57	58
Santa Maria	197,451	6,582	5,869	4,952
Summerland	3,920	131	131	128
Goleta	8,390	280	334	.....
Seacliff	1,060	35	.....	.....
Ventura Avenue	1,571,515	52,384	55,233	56,671
Ventura-Newhall	183,241	6,108	6,235	6,184
Los Angeles-Salt Lake	50,872	1,696	1,617	1,826
Whittier	52,147	1,738	1,748	1,834
Fullerton (Brea Olinda)	481,073	16,036	16,943	24,848
Coyote	410,140	13,671	14,051	15,513
Santa Fe Springs	1,163,440	38,781	39,143	45,176
Montebello	406,265	13,542	14,182	17,492
Richfield	672,556	22,418	21,433	17,917
Huntington Beach	1,828,500	60,950	62,608	75,333
Long Beach	3,012,029	100,401	92,759	95,509
Torrance	614,780	20,493	20,699	26,577
Dominguez	422,119	14,071	14,959	20,261
Rosecrans	243,592	8,120	7,778	14,800
Inglewood	957,307	31,910	32,646	39,947
Newport	772	26	41	61
Seal Beach	1,499,635	49,988	61,019	5,119
Potrero	.....	.....	18	.....
Total	18,516,467	617,216	627,384	639,104
October	19,448,893	627,384	.....	.....
Decrease	932,426	10,168	.....	.....

STOCKS

	Nov. 30, 1927	Oct. 31, 1927	Nov. Stock Decreases	Nov. 30, 1926
Heavy crude, heavier than 20° A.P.I., including all grades of fuel	93,807,893	93,593,275	*214,618	88,606,574
Refinable crude, 20° A.P.I., and lighter	21,371,274	21,841,747	470,473	30,224,135
Gasoline	12,812,580	12,684,662	*127,918	11,209,705
Naphtha distillates	2,039,755	2,351,849	312,094	3,841,424
All other stocks	9,659,921	9,574,715	*85,206	11,022,036
Total all stocks	139,691,423	140,046,248	354,825	144,903,874

*Increase.

DEVELOPMENT

	New Rigs Up	Active Drilling	Completed	Daily Initial Output	Active Producing	Abd. Wells Drillers	Abd. Wells Producers
Kern River	18	18	16	3,010	1,341	...	...
Mount Poso	...	1	...	....	3	1	...
Round Mountain	2	6	...	....	1	...	...
McKittrick	3	4	2	112	317	...	...
Midway-Sunset	5	10	...	....	2,860	1	1
Elk Hills	...	...	1	25	224	...	...
Lost Hills-Belridge	...	1	...	....	276	...	...
Coalinga	...	3	...	....	983	...	1
Wheeler Ridge	1	1	1	40	30	...	...
Watsonville	...	...	...	....	6	...	...
Santa Maria	1	3	...	....	215	...	3
Summerland	...	1	...	....	91	...	...
Goleta	1	1	...	....	6	1	...
Seacliff	13	14	1	1,000	1	...	...
Ventura Avenue	3	27	1	3,095	104	...	...
Ventura-Newhall	3	18	1	50	505	3	1
Los Angeles-Salt Lake	...	...	...	....	331	...	3
Whittier	...	...	...	....	182	...	...
Fullerton	...	5	1	40	386	...	...
Coyote	...	2	1	50	208	1	...
Santa Fe Springs	...	3	...	....	322	...	...
Montebello	...	4	...	....	178	...	1
Richfield	...	11	5	2,102	259	1	2
Huntington Beach	9	24	12	2,391	596	...	...
Long Beach	56	57	5	15,172	645	2	5
Torrance	1	1	1	55	654	...	4
Dominguez	...	3	...	....	73	...	...
Rosecrans	1	1	2	163	117	1	1
Inglewood	3	2	2	222	225	...	...
Newport	1	2	...	....	5	...	...
Seal Beach	...	7	3	453	134	16	3
Miscellaneous drilling	16	128	...	....	....	7	...
November	137	358	55	27,980	11,278	34	25
October	87	332	61	26,101	11,242	19	9
Increase	50	26	*6	1,879	36	15	16
Average year 1926	95	422	76	32,635	11,288	24	17
Average year 1925	105	417	79	42,247	11,393	28	12
Average year 1924	103	510	103	42,412	10,903	28	21
Average year 1923	111	759	87	114,690	8,928	24	
Average year 1922	115	606	67	43,700	9,410	17	

*Decrease.

Testing Reduction of Breathing Loss

Relative Value of Operating Under Pressure, Light and Dark Paints and Housing Tanks

By Ludwig Schmidt
Associate Petroleum Engineer, Bureau of Mines, Department of Commerce.

The use of vapor-tight tanks has proved so effective in reducing the evaporation losses of petroleum that today practically all operators are using this type of equipment. It has been shown, however, that vapor-tight tanks should be supplemented with additional measures which will further reduce evaporation. Probably the most effective use of the supplemental measures are found on the small producing leases where the breathing losses from vapor-tight stock tanks materially affect the volume and gravity of the stored oil. The breathing loss from a vapor-tight stock tank that is filled and emptied daily is a negligible quantity. Also, the filling loss, which on the average varies between 0.1 and 0.2 per cent, usually is not of a sufficient quantity to affect materially the value of the crude. However, the combined breathing and filling losses from the vapor-tight tank requiring several days to fill are of sufficient importance to warrant the use of measures in addition to the vapor-tight tanks. The breathing losses are caused by atmospheric variations. Probably the greatest are the changes in atmospheric temperature which cause changes in temperature of the vapors in the tank. During the day, as the temperature increases, the gasoline-saturated vapors in the tank expand and are forced out into the atmosphere. At night the vapors are cooled and contract, drawing into the tank fresh air, which becomes saturated with gasoline vapor and is forced out of the tank during the following day. In addition to the maximum and minimum temperature variations there are many smaller variations throughout a 24-hour period caused by showers, clouds, winds, and other atmospheric conditions which likewise cause the tank to breathe.

The two most common measures used by lease operators for reducing breathing losses in vapor-tight tanks are, first, operating lease tanks under pressure, and second, the use of light colored paints and tank houses. In this report these two methods are discussed together with their adaptability to lease operation. Results of experimental observations are given which show the reduction of evaporation losses where these supplemental measures have been used.

Maintaining of Pressure on Tanks

The operation of lease tanks under pressure prevents gasoline-laden vapor from leaving the tank until certain definite and predetermined pressures are built up within the tank. This restricts the movement of vapors due to temperature variations and reduces the movements due to other atmospheric changes such as windage and barometric pressure.

The holding of pressure on lease tanks is not limited from considerations of construction, for there are now on the market bolted tanks operating under working pressures up to 18 or 20 ounces, and many producers are using riveted or welded tanks, operating under pressures as high as 5 pounds. Local conditions of lease operation, however, may limit the amount of pressure held on stock and flow tanks.

It must be kept in mind that to eliminate all breathing by the use of pressure relief valves, the valves must be set to operate at a slightly higher pressure than the maximum developed within the tank. This internal pressure is the vapor pressure of the oil plus the pressure due to the expansion of the air-vapor mixture caused by atmospheric changes.

Tests on Pressure Tanks

In order to determine the actual value of holding pressure on lease stock tanks, a comparative test was made between two 65-bbl. tanks; one was equipped with a pressure and vacuum release valve operating at about 1½ ounces pressure or vacuum; the other was equipped with a valve operating at 16 ounces pressure and 2 ounces vacuum. The valves were of the dead weight type.

In order to duplicate filling conditions on a small lease the test tanks were partly filled at regular intervals with oil having an average gravity of 37.5 degrees A.P.I. Gauges, temperatures of the oil, and samples were taken at the beginning and end of each filling period. From these data the evaporation loss for each interval was obtained, also the total evaporation loss for the entire filling period. The oil passed through a combination flow tank and gas separator before entering the stock tanks.

Results of Tests on Pressure Tanks

Observations were made over a period of 36 days during the months of January and February. The average atmospheric temperature was 46 degrees Fahrenheit. The total volumetric loss for the tank equipped with the 2-ounce pressure relief valve was 1.40 per cent, with a gravity loss of 0.55 degrees A.P.I. The total volumetric loss for the tank equipped with the 16-ounce pressure relief valve was 0.59 per cent, with a gravity loss of 0.3 degrees A.P.I.

The evaporation losses sustained in this test are much below average, due to the low atmospheric temperatures and other winter conditions. During the summer months the losses would be at least twice those indicated by the test.

The result of this test and other tests on lease storage show that a tank equipped with a pressure relief valve, operating at 14 to 16 ounces pressure will reduce the evaporation losses about 60 per cent, as compared with a tank equipped with a relief valve holding about 2 ounces pressure, with other conditions equal.

The effect of pressure relief valves in reducing the amount of time the tank is breathing out is given in Figure 1, which shows the hourly temperatures and pressures of the vapor in a 250-bbl. lease tank for a four-day period during the latter part of May, 1926. This test probably represents average temperature conditions in the Mid-Continent area. The tank was equipped with a relief valve operating at 15.2 ounces pressure and 2 ounces vacuum. Figure 1 shows that on May 29, the tank vented to the atmosphere about 110 minutes. No venting took place on May 30 although the temperature in the vapor space reached 110 degrees Fahrenheit. During the early morning hours of May 31 the temperature of the vapor space was 10 degrees Fahrenheit lower than the minimum reached the preceding day. This caused a considerable contracting of the vapor with the resultant flow of fresh air into the tank. For this reason the tank vented for a short period on May 31 although the maximum temperature was only 103 degrees Fahrenheit, or 7 degrees Fahrenheit less than the preceding day. The minimum temperature was 5 degrees Fahrenheit lower than any preceding day recorded on the curve, and the maximum temperature was about 113 degrees Fahrenheit. This resulted in the tank venting for about 30 minutes. This curve shows clearly the effect of temperature variation upon the breathing of the tank. It also indicates that if the tank had been equipped with a free vent, every variation in temperature would have caused a movement of vapor, (either contraction or expansion) in the tank.

Figure 2 shows the pressure and temperatures developed, under operating conditions, in a 250-bbl. lease tank equipped with a relief valve operating at 13.6 ounces pressure and 2 ounces vacuum. The data cover a period of 25 days. Gauging operations are shown by a rapid drop in pressure when the gauge hatch is opened, and the rebuilding of the pressure after the gauge hatch is closed, as at noon on August 16. Pipe line gauge, "turn on", and final gauge are shown beginning with the gauge and "turn on", August 18, and the final pipe line gauge

*In co-operation with the State of Oklahoma.

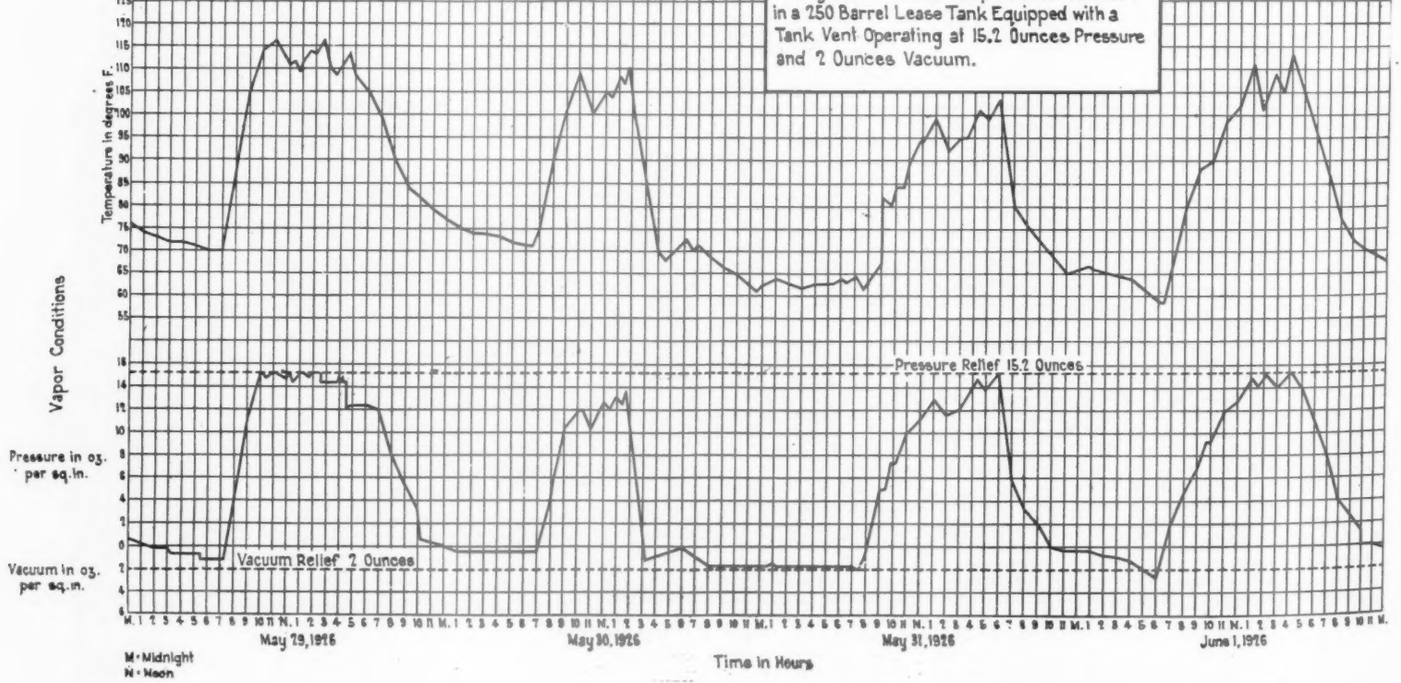


FIGURE 1
Hourly Pressures and Temperatures Recorded in a 250 Barrel Lease Tank Equipped with a Tank Vent Operating at 15.2 Ounces Pressure and 2 Ounces Vacuum.

and "turn off" for the morning of August 19. The filling operation is indicated by the excessive pressures developed on August 27.

Effect of Light Colored Paints and Tank Houses

Although the value of light colored paints has been discussed in a previous report[1] it might be well to state two of the principal reasons for the use of light colored paint. First, light colored paint reduces the breathing of the tank by reducing the variations of the temperature of the vapor space. Second, it reduces the temperature of the vapor and the surface temperature of the oil. By lowering the surface temperature of the oil, the vapor pressure is reduced; this greatly reduces the breathing of the tank and the amount of gasoline vapor in the air-vapor mixture above the oil.

Tank houses reduce the evaporation losses in the same manner as light colored paints, that is, by reducing the breathing due to temperature variation and by reducing the vapor pressure of the crude. However, care must be exercised in the use of tank houses for this type of construction accelerates the flow of air around and over the tank, similar in action to a flue. If the tank is not vapor tight the use of the tank house probably will increase evaporation losses due to the increased circulation of air over the oil surface.

Relative Value

In order to determine the relative value of light colored paints and tank houses, three 250-bbl. lease tanks, one painted with aluminum paint, one painted red, and the third protected by a wooden tank house were equipped with recording thermometers and observations were taken over an extended period of time. All of the tanks under observation were of the same make and equipped with a combination gauge hatch and vacuum and pressure relief valve. In this valve the pressure relief is of the dead weight type, excessive pressure raising the entire cover allowing the air vapor mixture to vent through the gauge hatch. The pressure valve operates at 16 ounces. The vacuum relief is operated by the vanadium steel spring which may be regulated to open at from one-half to 4 ounces of vacuum. In this test the vacuum valve was set to operate at 2 ounces. Before opening the gauge hatch for sampling the oil or gauging, the pressure in the tank is released by pushing down the plunger in the center of the valve cover. This allows the excess air-vapor mixture to escape through the vacuum vent.

[1] Schmidt, Ludwig, "Effect of Tank Colors on Evaporation Loss of Crude Oil" Serial 2,677, Bureau of Mines, 1925.

TABLE 1
AVERAGE SAMPLE OF OIL USED IN COMPARATIVE PAINT AND HOUSED TANK TEST

Air Distillation

Specific Gravity, 0.843 — A.P.I. Gravity, 36.3°
Per cent water, trace.

DISTILLATION, BUREAU OF MINES, HEMPEL METHOD

Barometer 745mm. First drop: 30°F. (80°F.)

Air Distillation Temperature °C.	Per Cent cut	Sum Per Cent	Specific Gravity cut	A.P.I. cut	Temperature °F.
Up to 50	1.4	1.4	0.655	84.5	Up to 122
50- 75	1.4	2.8			122-167
75-100	3.7	6.5	0.711	67.5	167-212
100-125	6.4	12.9	0.735	61.0	212-257
125-150	5.8	18.7	0.754	56.2	257-302
150-175	5.3	24.0	0.771	52.0	302-347
175-200	5.0	29.0	0.788	48.1	347-392
200-225	5.6	34.6	0.806	44.1	392-437
225-250	5.6	40.2	0.818	41.5	437-482
250-275	6.7	46.9	0.832	38.6	482-527

APPROXIMATE SUMMARY

	Per Cent	Specific Gravity	°A.P.I.
Light gasoline	6.5	0.687	74.5
Total gasoline and naphtha	29.0	0.744	58.7
Kerosene distillate	11.2	0.812	42.8
Gas oil	6.7	0.832	38.6

TABLE 2
Comparative Temperature Data on Three 250-Bbl. Lease Tanks Operating Under 16 Ounces Pressure, One Painted Red, One Aluminum, and the Third Equipped with Wooden Tank Housing.

	Color of Tank—Red	Color of Tank—Aluminum	Housed Tank	Atmospheric Temperature
Maximum temperature in °F.	127°F.	112°F.	101°F.	93°F.
Minimum temperature °F.	52°F.	44°F.	45°F.	40°F.
Average daily maximum temp.	108°F.	92°F.	89°F.	82°F.
Average daily minimum temp.	60°F.	57°F.	63°F.	58°F.
Average daily temperature variation in vapor space	48°F.	35°F.	26°F.	24°F.
Average temperature of vapor	84°F.	74.5°F.	76°F.	70°F.
Estimated average daily increase of pressure due to thermal expansion of vapor in pounds per square inch	1.32	1.08	.72	

Crude Oil Used

The crude oil produced on this lease had an average gravity of about 36.3 A.P.I. with a gasoline and naphtha content of 29 per cent, determined by the Bureau of Mines Hempel method. A distillation record of the average crude is shown in Table 1.

Discussion of Test

The comparative observations were started in March, 1926, and extended through October of the same year. The vapor temperatures in each tank were obtained with recording thermometers which were checked at intervals of four weeks. At these times, a general inspection of each tank was made to see that it was in first class condition and that no oil or dirt had collected on the tank that would affect the value of the different colored paints. All observations were made during the normal operation of the lease.

Results of Test

Observations made during the month of May were selected for discussion as they represent average conditions throughout the test period; these are shown in Table 2.

Table 2 shows the average daily minimum temperature for the housed tank to be 63 degrees Fahrenheit. This figure is the highest average daily minimum of the three tanks. An explanation for the comparatively high minimum temperature for the housed tank probably depends upon the laws of heat absorption. During the day the wood absorbs heat from the sun; at night the heat is given off slowly, and some of it is taken up by vapors in the tank. This action tends to retard the cooling. Also the housing prevents the cooling effect on the tank of occasional showers and of any dew or other moisture which collects on objects during the night.

The average daily increase of pressure due to the thermal expansion of the vapor as shown in Table 1 was calculated from the average temperature variations and does not include the increase of pressure due to the increase of the vapor pressure of the crude oil, which is different for crude oils.

Actual evaporation tests were not made on these tanks. However, the gauge tickets of the oil run from these tanks show the economic value of the aluminum, red, and housed tanks. The oil run varied in gravity from 35.6 degrees A.P.I. to 36.7 degrees A.P.I. the average being about 36 degrees A.P.I. The gauge tickets of oil run from each tank during the months of May, June, July and August show that for the housed tank the average gravity was 36.34 degrees A.P.I., with 9 per cent of the oil run being under 36 degrees A.P.I.; for the aluminum painted tank the average gravity was 36.21 degrees A.P.I. with 14 per cent of the oil run being under 36 degrees A.P.I.; and the oil run from the red tank had an average gravity of 36 degrees A.P.I. with 37.5 per cent under 36 degrees A.P.I.

These records show conclusively the economic value of the light colors over dark colors for painting tanks; also the value of tank houses.

Although the housed tank showed best results in this test it should be kept in mind that installations must be made with care. First, if the tank is not kept vapor tight the housing, acting smilar to a flue, increases the circulation of air in the vapor space above the oil. Second, wood housing is inflammable and becomes a greater fire hazard as the boards become saturated with oil. Third, the space between the tank and housing often becomes a trash heap due to the accumulation of rags, waste, and other refuse, which gives the lease an unsightly appearance as well as increasing the fire hazard.

These tests indicate that it is doubtful if pressure alone or the use of light colored paints, or insulation alone will be the most economic methods of reducing the breathing losses from vapor tight tanks. It is probable that the most effective method will consist of a combination of light colored paints and the holding of suitable pressures on the tanks. The amount of pressure required depends upon the lease operation and the physical characteristics of the oil handled.

This investigation was conducted under

(Continued on Page 245)

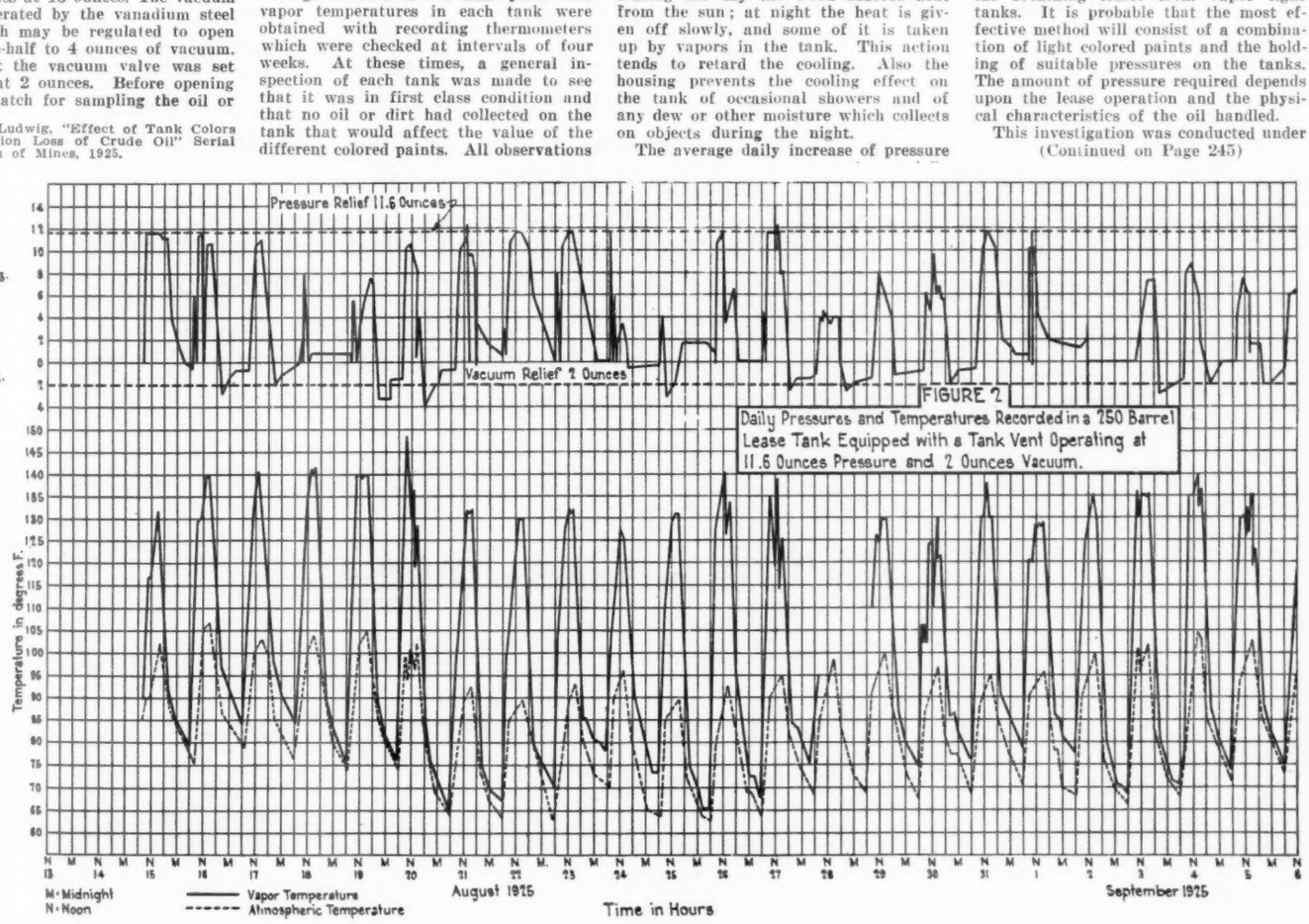


FIGURE 2

Daily Pressures and Temperatures Recorded in a 750 Barrel Lease Tank Equipped with a Tank Vent Operating at 11.6 Ounces Pressure and 2 Ounces Vacuum.

Reader Interest
of the
Classified

"This may sound peculiar," said a Texas oil producer who called at this office a few days ago, "but I read your classified ads, not only to look for acreage and that sort of thing, but for the NEWS contained in them."

The statement didn't sound peculiar to us, because we had heard ones of similar nature many times before.

In fact, the Classified Wants pages of The Oil and Gas Journal are a veritable barometer of the oil industry. Prosperity, depression, development of new fields, slowing down of activity in old ones are all reflected in the subject matter of ads that appear from week to week.

It is therefore natural that our classified pages should enjoy a wide reader interest, and it is this reader interest that accounts, in considerable measure, for the result-getting power of The Oil and Gas Journal classified advertisements.

If you buy or sell leases, royalties, production, used equipment; if you need efficient help or are looking for a business opportunity, you can best get in touch with the proper parties by using The Oil and Gas Journal Classified Wants. You will save time and no end of tedious correspondence.

The OIL and GAS JOURNAL
PRODUCING REFINING MARKETING

Classified Wants Department

WILDCAT OPERATIONS IN PANHANDLE

(Continued from Page 56)

Danciger O. & R. Co.'s No. 6 W. Jackson, Sec. 88, Blk. B-2, H. & G. N. Sur. — Drlg., 1,530 ft.
Danciger O. & R. Co.'s No. 7 W. Jackson, Sec. 88, Blk. B-2, H. & G. N. Sur. — Drlg., 1,350 ft.
Danciger O. & R. Co.'s No. 8 W. Jackson, NE cor. NW, Sec. 88, Blk. B-2 — Drlg., 322 ft.
Donley Gray Oil Co.'s No. 1 J. W. Gordon, Sec. 79, Blk. 3 — Wtr. 3,380 ft. and 3,420 ft; show oil; H.F.W., 3,650; drlg. G.W., 3,810 ft.
Delaney et al's No. 2 Jackson — 3,000,000 ft. gas, 2,590 ft., increased to 11,000,000 ft. at 2,760 ft. drlg., 2,994 ft; show oil, 2,850 ft.
Edwards et al's No. 1 E. J. Case, NE cor. Sec. 182, Blk. B-2, H. & G. N. Sur. — 70,000,000 ft. gas, 2,512-2,630 ft; drlg. by bit, 3,028 ft.
Gardner et al's No. 1 G. H. Saunders — Cellar.
Gibson Oil Corp.'s No. 2 J. B. Bowers — Drlg., 2,990 ft.
Gurnsey Oil Co.'s No. 1 B. E. McKinney — Drlg., 2,900 ft.
Gurnsey Oil Co.'s No. 2 B. E. McKinney, Sec. 163, Blk. 3, I. & G. N. Sur. — Rig.
Collins & Gardners (formerly Lefors Pet. Co.'s) No. 1 J. Shaw, Lefors townsite — 10,000,000 ft. gas, 2,440-50 ft; 70,000,000 ft. gas, 2,625 ft; T.D., 2,650 ft; trying to pull 8-in. and it parted; rigging up.
H. C. McCauley et al's No. 1 J. Morse, Sec. 2, Blk. 46, H. & G. N. Sur. — Top lime, 1,770 ft; 10,000,000 ft. of gas at 2,352-65 ft., show of oil 2,400 ft., drlg. 2,406 ft.
Magnolia Pet. Co.'s No. 1 J. Bowers — Fish., 2,025 ft.
Magnolia Pet. Co.'s No. 1 J. J. Wall, NE cor. Sec. 162, Blk. 3, I. & G. N. Sur. — Drlg., 300 ft.
Midwest Explin. Co.'s No. 1 J. Bowers — Topped G.W., 2,785 ft; drlg., 3,019 ft; show oil, 2,958 ft.
Midwest Explin. Co.'s No. 1 L. Holmes, Sec. 86, Blk. 3, I. & G. N. Sur. — Rig.
Neudigate et al's No. 1 A. Chapman, NE cor. E ½, SE, Sec. 52, Blk. 25 — 500,000 ft. gas, 2,760-65 ft; rainbow of oil, 2,820-25 ft; salt wtr; G.W., 2,827-28 ft; S.D., 2,835 ft.
Operators Oil Co.'s No. 1 Jackson — Flowed 1,800 bbls. in 24 hrs. from best G. W. pay, 2,967-84 ft., running 5-in to 2,990 ft. S. L. M. C.O.
Operators Oil Co.'s No. 2 W. Jackson, NW cor. N ½ NE, Sec. 88, Blk. B-2 — Rig.
Phillips Pet. Co.'s No. 1 Davidson (Myson) — Drlg., 400 ft.
Phillips Pet. Co.'s No. 1 W. Jackson (was Clark et al's No. 2) — S.O., 2,890 ft; run 6-in., 2,905 ft.
Phillips Pet. Co.'s No. 2 W. Jackson (was Clark et al's No. 3) — Swab. 100 bbls. in 12 hrs., 2,892 ft.
Phillips Pet. Co.'s No. 3 W. Jackson — Fish., 1,100 ft.
Phillips Pet. Co.'s No. 1 Jackson-Riley (was Clark et al's No. 1 W. Jackson) — 7,000,000 ft. gas, 2,442-2,545 ft; swabbed 160 bbls. at 2,981 ft. S. D. 2,942-54 ft.
Phillips Pet. Co.'s No. 2 Jackson-Riley — Fish., 2,310 ft.
Phillips Pet. Co.'s No. 3 Jackson Riley, Sec. 88, Blk. B-2, H. & G. N. Sur. — Rig on ground.
Pampa Oil Co.'s No. 1 W. R. Campbell, Sec. 90, Blk. 3 — Drlg. 3,433 ft.; 700 ft water, 3,430 ft; S.D., 3,432 ft.
Purple Sage Oil Co.'s No. 2 E. B. Johnson — Spudding and S. D.
Ray & Massie's No. 1 A. Chapman, NE NW SW, Sec. 51, Blk. 25 — Location.
Remo Oil Co.'s No. 1 B. E. McKinney — Rigging up.
Smallwood et al's No. 1 W. H. Taylor, C NE, Sec. 10, Blk. B-2 — Rig on ground.
St. Clair Oil Co.'s No. 1 C. H. Rowe — Spud. and S.D.
St. Clair Oil Co.'s No. 1 L. S. Stocklon, SE cor. Sec. 35, W. R. Lee Sur. — Rig on ground.
Shamrock Pet. Co. et al's No. 1 J. B. Back, SE NW SW, Sec. 44, Blk. 25 — Drlg. hard G.W., 2,460 ft.
Shamrock Oil Co.'s No. 1 W. S. Clayton — Spud.
Skelly Oil Co.'s No. 1 Bradford, NE cor. Sec. 118, Blk. B-2, H. & G. N. Sur. — Drlg., 420 ft.
Skelly Oil Co.'s No. 1 W. Jackson — 7,000,000 ft. gas, 2,730 ft. S. O. at 2,865-70 ft; exhausted little fresh wtr., 3,012 ft. to D.D.
Skelly Oil Co.'s No. 2 Jackson — Drlg., 2,225 ft.
Spartan Oil Co.'s No. 1 J. Hopkins — Rig.
Sullivan et al's No. 1 A. Chapman-A — Spudding.
Sun Oil Co.'s No. 1 Jackson — Drlg., 1,100 ft.
Staggers Oil Co.'s (was Ruby Oil Co.'s) No. 1 B. F. Tally — T.D., 635 ft; S.D.
The Texas Company's No. 1 J. B. Bowers — Drlg., 2,685 ft; 4,000,000 ft gas, 2,565 ft.
The Texas Company's No. 2 J. B. Bowers — Drlg., 2,660 ft.
The Texas Company's No. 3 J. B. Bowers — Drlg., 510 ft. to run 15-in.
The Texas Company's No. 4 J. B. Bowers, SE cor. SE, Sec. 93, Blk. B-2 — New location.
The Texas Company's No. 2 H. M. Davis, SW cor. NW, Sec. 86, Blk. 3 — Bldg. rig.
The Texas Company's No. 1 McLarty et al, SW cor. E ½ NW, Sec. 1, Blk. 1, A. C. H. & B. Sur. — Rig.
The Texas Company's No. 1 S. McLarty — Rig.
The Texas Company's No. 4 G. H. Saunders — Drlg., 2,545 ft; 6,000,000 ft. gas, 2,495 ft.

HALE COUNTY

Bailey & Young's No. 1 Thomas, Sec. 1, Blk. J.K.L. — S.D., 175 ft.
Donnell Pet. Co.'s No. 2 Mullican, NW cor. Sec. 66, Blk. A-3, I. & S. B. Sur. — Top pay in sandy shale, 405 ft; ½ bailer oil and 3 bailers wtr. per day; S.D., 620 ft.
Donnell Pet. Co.'s No. 1 Mullican, C Sec. 21, Blk. B, R. M. Thompson Sur. — 200 ft. fluid in hole from 407-14 ft; S.D.
Explin. Co.'s No. 1 Crawford, C NE, Sec. 17, Blk. C-3, T. T. R. R. Sur. — Spudded and S.D.
Explin. Co.'s No. 1 Goodman — Spudded and S.D.
A. S. Mimm's No. 1 W. A. Ritcher, 700 ft. from east line and 1,200 feet from south line, Sec. 17, Blk. X, John Glynn Sur. — S.D., 1,140 ft.
Tolbert & Simms' (was Gouldy & Stone's) No. 1 Kitteral, SE cor. NW, Sec. 65, Blk. A-3, G. C. & S. F. Sur. — S.D., 485 ft.

HALL COUNTY

Briscoe Oil Assn.'s (was Seifert et al's) No. 1 Owens, C NE, Sec. 179, Blk. S-5, Dennison & Pacific Sur. — Spudded and S.D.

HANSFORD COUNTY

Caldwell et al's No. 1 J. Adriance est. — S.D. for pipe, 645 ft.
Oklavania et al's No. 1 Coots, Sec. 13, Blk. 45, H. & T. C. Sur. — S.D., 560 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood — S.D., 1,455 ft.

HARTLEY COUNTY

Deep Rock Oil Co.'s No. 1 Lymann & Balfour, Sec. 9 — Preparing to abd., 4,038 ft.
Eslick et al's No. 1 J. R. Irving, Sec. 13, Blk. 13 — Topped G.W., 3,103 ft; show oil 3,226 ft; hole full wtr., 3,745-55 ft; S.D., 4,000 ft.

HEMPHILL COUNTY

Hoover et al's No. 1 Schaller est., Sec. 4 — Spudded and S.D.
Hoover et al's No. 1 fee, J. S. Hood Sur. — Drlg., 4,860 ft.

HUTCHINSON COUNTY

R. G. Barnum et al's No. 1 Garland Sanford, Sec. 78, Blk. 46 — Rig.
Beam et al's No. 1 Cockrell, Sec. 3, Blk. 23 — S.D., 405 ft. for orders.
Big Coach Oil Co.'s No. 1 Dunnaway, Sec. 5, Blk. Y — S.D., 750 ft.
Conklin et al's No. 1 Johnson, Sec. 1, Blk. X03, H. & O. B. Sur. — S.D., 600 ft.
Harris et al's No. 1 J. Q. Bost, Sec. 10, Blk. Y-2, T. T. R. R. Sur. — Rig.
Holmes & Quinn's No. 1 J. K. Quinn, SW cor. Sec. 9, Blk. 3, B. S. & F. Sur. — Rig. U. S. D.
McMan O. & G. Co.'s No. 1 Albert Yake — Drlg., 1,600 ft.
Phillips Pet. Co.'s No. 12 Elva-Whittenburg, E. Tomlinson Sur. — T.A., 4,445 ft.
Phillips Pet. Co.'s No. 1 Perkins-Hamilton — Loc.
Phillips Pet. Co. and White Eagle O. & R. Co.'s No. 1 Lee Bivins — Top pay 2,994 ft., total depth, 2,994 ft., swabbed 200 bbls. 1st 24 hrs.; to drill deeper.
Prairie O. & G. Co. and Vacuum Oil Co.'s No. 2 Cal Merchant — Drlg., 2,109 ft.
Skelly Oil Co.'s No. 2 Armstrong & Byrd — Rig.
Skyrocket Oil Co.'s No. 1 Mrs. R. A. Jameson — C.O., 3,146 ft; 800 ft. oil in hole.
The Texas Company's No. 1 Cockrell-B — Drlg., 3,040 ft; T.P., 3,015 ft; 500 ft. oil in hole.
Timms et al's No. 1 C. R. Garner — Drlg., 2,200 ft.

KING COUNTY

Humble O. & R. Co.'s No. 1 Pitchfork, Sec. 171, Blk. A-96, John H. Gibson Sur. — Drlg., 3,253 ft.
J. L. Pattison's No. 1 Patton — Slight show gas, 2,115-30 ft.; fish 3,410 ft.

LAMB COUNTY

Dan Freel et al's No. 1 Ellwood, CWL S.ec. 9, Blk. T. T. A. Thompson Sur. — Rig.
Tolbert & Simms' No. 1 Ellwood, NE SW SW, Sec. 14, Blk. B, R. M. Thompson Sur. — 712 ft; small show oil and hole full wtr.; drlg., 985 ft.

LIPSCOMB COUNTY

Cal-Tex's No. 1 Bradford, C NE NE, Sec. 899, Blk. 43, H. & T. C. Sur. — Spudded and S.D.
Camp Creek Oil Co.'s No. 1 Mrs. H. D. May, Sec. 612, Blk. 43 — S.D., 1,400 ft.
McCorkle's No. 1 A. Barton, NE cor. SW SE, Sec. 504, Blk. 43, H. & T. C. Sur. — Wtr. in lime, 4,126-40 ft; 6-in set, 4,155 ft; S.D., 4,225 ft.
Ozark Drlg. Co.'s No. 1 Frass, NE SE, Sec. 106, Blk. 10, H. & T. C. Sur. — Rig on ground.
Smith, Kinsley & Ruby's No. 1 C. W. Jones, NE cor. SW, Sec. 100, Blk. 43 — Show oil, 3,520 ft; S.W., 3,900 ft; S.D. in lime and blue shale, 4,355 ft. for 6-in.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles ranch — Small show oil, 1,133-40 ft., in sand; shut down 2,730 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Thompson-Amarillo, Cen. Sec. 22, Blk. 26, E. L. & R. R. Sur. — Location.
Prairie and Shamrock's No. 2 Gober, Sec. 16, Blk. M-21 — T.D., 2,520 ft; recmt. 12-in., 1,525 ft; drlg. by tools.

MOTLEY COUNTY

Explin. Co.'s No. 1 Burleson — Spudded and S.D.
Explin. Co.'s No. 1 Tillson — S.D., 750 ft. for repairs.
Explin. Co.'s No. 1 Matador Land & Cattle Co., C SW, Sec. 37, John Gibson Sur. — S.D., 1,002 ft.
Wheeler et al's No. 1 C. D. Bird, C NE, Sec. 4, Blk. S, Stephens Sur. — Spudded and S.D.

OLDHAM COUNTY

Prairie O. & G. Co.'s No. 1 Landegrin, SE cor. NE SW, Sec. 46, League 310, Capital land — 1,900 ft. wtr., 4,085-93 ft; 1 bailer wtr. per hr. and light scum oil, 4,527 ft. (steel line meas.) cmt. 6-in., 4,442 ft; 2,000 ft. S.W., 4,850-56 ft; drlg., 5,183 ft.

OCHILTREE COUNTY

W. G. Burton's No. 1 Strickler — S.D., 3,940 ft.
Hamilton et al, H. E. Wamble — Shut down, 250 ft.
McCorkle P. L. Co.'s No. 1 R. H. Moore — Shut down, 1,600 ft.
Montgomery's No. 1 Weinett — Shut down, 850 ft.
Standard Development Co.'s No. 1 Bowen — Shut down, 900 ft.

POTTER COUNTY

Frank Allen et al's No. 1 W. H. Bush — Drlg., 298 ft.
Prairie O. & G. Co.'s No. 2 Lee Bivins, 660 ft. N. and 330 ft. W. of SE cor. Sec. 39, Blk. M-20, G. & M. Sur. — Drlg., 1,011 ft.

RANDALL COUNTY

Westbrook Oil Co.'s No. 1 J. Beckman, SW cor. SE NE, Sec. 46, Blk. B-5 — Drlg., 825 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Mrs. H. Ledrick & Sons, Sec. 7, Blk. 5-A — Show gas, 4,990 ft; show oil, 4,992 ft; cas. set, 4,992 ft; S.R. for 3-in. pipe; T.D., 5,153 ft.

SHERMAN COUNTY

Gibson Oil Co.'s No. 1 Bivins, Sec. 35, Blk. 3-B — 100,000 ft. gas, 2,016-26 ft; T.D., 3,353 ft; 2,000 ft. S.W., 3,325-33 ft; drlg. by tools, 3,353 ft.
Phillips Pet. Co. and Prairie O. & G. Co.'s No. 1 Price & Fuqua, C NE, Sec. 33, Blk. 2-B, G. H. & H. Sur. — 100,000 ft. gas, 2,105-10 ft; T.D., 3,420 ft; 2,000,000 ft. gas, 3,325-3,420 ft. lime; 400 ft. wtr. in hole from 3,535 ft.

WHEELER COUNTY

E. L. Arnold's No. 1 M. J. Williams — Show gas, 1,644 ft; T.D., 1,790 ft; fish. bit; junked hole, 1,780 ft; to abd.
Byrens et al's No. 1 Johnson, SW cor. NE, Sec. 88, Blk. A-5, H. & G. N. Sur. — S.D., 450 ft.
Clark et al's No. 1 J. W. Gordon — Drlg., 1,765 ft; show gas.
Rook et al's (was Foster et al's) No. 1 S. H. McDonald, SE cor. NW SW, J. N. Lindsay Sur. — Spudding and shut down.
Hatcher et al's No. 2 J. Hatcher, C NE SW, Sec. 80, Blk. 23, H. & G. N. Sur. — Drlg., 300 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 J. F. Coates, Sec. 93, Blk. 17, H. & G. N. Sur. — Rig on ground.
Mid-Kansas Oil & Gas Co.'s No. 1 J. L. Newton, Sec. 92, Blk. 17, H. & G. N. Sur. — Location.
Piney O. & G. Co.'s No. 1 W. S. Walker, Sec. 44, Blk. 24, H. & G. N. Sur. — Fish. for bit, 2,260 ft.
Rook & Angus' No. 1 Smock (Linkey) C SE SE, Sec. 5, Blk. 24, H. & G. N. Sur. — Rigged up and S.D.
Smith Brady et al's No. 1 P. J. Sorenson, Sec. 53, Blk. A-4 — S.D., 2,120 ft. for orders.
The Texas Company's No. 2 Morgan, Sec. 92, Blk. 17. — Drlg., 1,326 ft.
Vaughan et al's No. 1 M. Ackley — Location.
Pete Woodley's No. 1 J. Boyle — Drlg., 450 ft.
Kaufold et al's No. 1 E. R. Wallace — Rig.
Watchorn Oil & Gas Co.'s No. 2 Binkley & Caine, Sec. 92, Blk. 24, H. & G. Sur. — Rig.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 54)

Corbett & Gill's No. 1 University — Top salt 855 ft.; smell gas 1,800 ft.; hole full sulphur water 1,985-90 ft.; drlg. 2,320 ft.
J. S. Cosden, Inc., No. 1 Paul Perner, SW cor. Sec. 36, Blk. 2, I. & G. N. Sur. — Shut down 595 ft. for 15-in. pipe.
James Kelly et al's (was Corbett & Gill's) No. 1 Todd, C NE Sec. 43, Blk. WX, G. C. & S. F. Sur. — Top salt 993 ft.; show oil 1,948 ft.; 700 ft. sulphur water in hole 2,450 ft; total depth 2,605 ft.; plugged back to 1,948 ft. and shot 120 qts. 1,909-45 ft.; hole filled 250 ft. with water with slight scum of oil.
Van McPhail's No. 1 George Thompson — Location.
Van McPhail's et al's No. 1 George Thompson — Location.
Magnolia Pet. Co.'s No. 2 Shannon — Show oil 2,385-90 and 2,992 ft.; total depth 4,100 ft.; fish. 20 joints 8-in. casing.
Osage Oil Corp.'s No. 1 H. M. Halff — Drlg. 855 ft.
Bob Penn's No. 1 L. P. Powell — Hole full salt water 2,765 ft.; shut down.
William Shaffer et al's No. 1 University, C SE SE Sec. 9 Blk. 47, University Sur., elev. 2,344 ft. — Top pay 2,138 ft.; total depth 2,368 ft.; shot with 220 qts. 2,133-73 ft.; cleaning out 5 bbls. daily before shot.

William Schaffer et al's No. 2 University, 1,350 ft. N and 2,610 ft. E of SW cor. Sec. 9, Blk 47, University Land ... Top salt 1,060 ft.; first oil show 2,190-96 ft.; second 2,225-29 ft.; 1 bailer oil in 10 hrs. at 2,590 ft.; shut down 2,635 ft., brown lime.

Simmons Oil Co. et al's No. 1 H. M. Halff, NW cor. Sec. 69, Blk. 1, I. & G. N. ... Top salt 445 ft.; show oil 610 ft.; 500,000 ft. gas 854 ft.; cem. casing.

W. W. Donnelly & Young's No. 1 Massey, Sec. 29, Blk. U-V ... Shut down 300 ft.

World Oil Co.'s No. 1 Schneeman-B, Sec. 50, Blk. BB, G. C. & S. F. Sur. ... Top salt 1,070 ft.; hole full salt water 2,210-15 ft.; drilling by tools; total depth 2,330 ft.

Young & Donnellys' No. 1 J. M. Shannon, C Sec. 11, Blk. 9, D. & S. E. Sur. ... 7,000,000 ft. gas at 1,662 ft.; shut down 1,676 ft.

CULBERSON COUNTY

Deep Rock Oil Co.'s No. 2 Kloh-Rumsey, Sec. 21, Blk 29, T. & P. Sur., T-1 (NE of No. 1) ... Shut down 1,110 ft.

James H. Gardner et al's No. 1 Radford, C SE Sec. 29, Blk. 62, Public School Land Sur. ... Shut down 700 ft.

Scott & Dittman's No. 1 Miller, SW cor. NW NE Sec. 1, School Blk, 97 ... Drlg. 310 ft.

ECTOR COUNTY

The Texas Company and Cosden's No. 1 W. E. Connell, SE cor. Sec. 24, Blk. B-16, School Land ... Top salt 925 ft.; small show oil 3,624 ft.; running 6-in. 3,633 ft.

FISHER COUNTY

Cranfill & Reynold's No. 1 J. A. Young, Sec. 208, B. B. B. & C. Sur. ... Drlg. 2,650 ft.; hole full salt water 2,400-35 ft.

Ideal Oil Co.'s No. 1 Jameson, C SE Sec. 111, Blk. 1, H. & T. C. Sur. ... Hole full salt water 2,345-2,520 ft.; shut down 3,304 ft.

Marland Oil Co. and Texon's No. 1 McCall, Sec. 108, Blk. 3, H. & T. C. Sur. ... Rig.

Marland Oil Co. and Vacuum Oil Co.'s No. 1 J. H. R. Lagow ... Drlg. 3,525 ft.

R. W. Raney's No. 2 Maberry, Sec. 56, Blk. 1, T. & P. Sur. ... Shut down for orders 2,725 ft.

The Texas Company's No. 1 D. S. Stevens, C SW SE SE Sec. 79, Blk. 1, H. & T. C. Sur. ... Hole full water 2,570-2,615 ft.; preparing to run casing to 3,045 ft.

FOARD COUNTY

Clark et al's No. 1 Atkins ... Lime 1,580-1,930 ft.; show gas 1,885 ft.; drlg. 2,430 ft.

The Texas Company's No. 1 Watkins ... Drlg. 3,575 ft.

GAINES COUNTY

Westheimer & Daube's No. 1 Birge & Forbes Land Co., Sec 308, Terrell County School Land ... Cem. 8-in. 3,900 ft.; shut down approx. 5,000 ft.

GARZA COUNTY

Emerald Oil Co.'s No. 1 D. Boren, NW cor. NE Sec. 137, Blk. 5, H. & G. N. Sur. ... Small show oil in gray lime 1,884-1,902 ft.; shut down 2,600 ft.; show oil and hole full water 2,420-60 ft.

Gulf Prod. Co.'s No. 1 E. P. Swenson-A, Sec. 67, Blk.2, H. & G. N. Sur. ... Top salt 495 ft.; top lime 2,075 ft.; drlg. gray lime 2,460 ft.

GLASSCOCK COUNTY

Texon & Marland's No. 1 Settles ... Set 10-in. 1,420 ft.; drlg. 1,895 ft., red rock.

HOWARD COUNTY

California Co.'s No. 1 Fisher Bros., SE SW NW Sec. 36, Blk. 33, T. & P. Sur., T-1-S ... Shows oil 1,530-48 ft. and 1,562-64 ft.; hole full water 2,020-34 ft.; hole full salt water 2,750-75 ft.; top lime 3,065 ft.; total depth 3,783 ft.; 6-in. froze; fishing for spear.

Coyle-Concord Oil Co.'s No. 1 Dora Roberts ... Shot 40 qts. 1,705-15 ft. and 1,860-90 ft.; cleaning out.

Coyle-Concord Oil Co.'s No. 2 Dora Roberts ... Shot with 40 qts. 1,850-70 ft.; 1,000 ft. fluid in hole.

Coyle-Concord Oil Co.'s No. 3 Dora Roberts, Sec. 156, Blk. 29 ... Drlg. 700 ft.

Dixie Oil Co.'s No. 1 H. R. Clay ... Shut down 3,325 ft.; show oil 3,320 ft.

Henshaw et al's No. 1 W. R. Settles, SW SE SW Sec. 135, Blk. 29 ... Hole full sulphur water 1,325-30 ft.; shut down 1,900 ft.

Lockhart & Co.'s No. 1 Dora Roberts, Sec. 157, Blk. 29 ... Rig.

Marland Oil Co.'s No. 1 Clay-E, NW NE SE Sec. 138, Blk. 29 ... Pay 2,480-2,500 ft.; swabbed approx. 160 bbls.; hole full salt water 3,360-70 ft.; clean. out 3,552 ft.

Marland Oil Co.'s No. 1 Richardson, C NW Sec. 12, Blk. 32, T. & P. Sur., T-1-S ... Top salt 870 ft.; drlg. 1,920 ft.

Marland Oil Co. and Zoch's No. 1 Jones, Sec. 32, Blk. 27, T. & P. Sur., elev. 2,218 ft. ... Drlg. 2,346 ft.

Mays, Nixon & Flowers' No. 1 W. J. Flowers ... Drlg. 1,388 ft.

Miley and Marland Oil Co.'s No. 1 C. D. Read, C NW Sec. 12, Blk. 31, T. & P. Sur. T-1-N ... Spudded and shut down 5 ft.

Owens & Sloan's No. 2 Dora Roberts, SW cor. SE Sec. 136, Blk. 29 ... Set 8-in. 1,923 ft.; drlg. 2,230 ft.

Peer Oil Corp's No. 1 Read, C NW Sec. 39, Blk. 30, T. & P. Sur., T-1-N. ... Hole full salt water 2,790-2,820 ft.; total depth 3,215 ft.; underreaming 6-in.

Schermerhorn Oil Co.'s No. 1 Dora Roberts ... Standardizing 1,931 ft.

Sun Oil Co.'s No. 1 W. R. Settles, Sec. 135, Blk. 29. ... Rig. up cable tools.

Texon O. & L. Co. and Marland Oil Co.'s No. 1 Mrs. Connaly, NE cor. Sec. 15, Blk. 33, T. & P. Sur., T-1-N ... Top salt 1,425 ft.; hole full salt water 1,760-1,800 ft.; show oil 3,065 ft.; hole full sulphur water 3,500-55 ft.; hole full water 3,925-50 ft.; underreaming 6-in. 4,050 ft.

Texon O. & L. Co. and Marland Oil Co.'s No. 2 W. R. Settles-A ... Shut down for storage; sand at 1,280-84 ft.

Ward Oil Co.'s No. 1 Dora Roberts ... Cem. 8¼-in. pipe at 1,675 ft.

Weekly Oil Corp. et al's No. 1 Dora Roberts, Sec. 156, Blk. 29 ... Rig. cable tools.

HUDSPETH COUNTY

American Land Co.'s (was Lockhart Bros.') No. 1 Gardner & Moseley, C SE Sec. 5, School Blk. 21 ... Shut down 1,000 ft.

Western States Oil Co.'s (was Lockhart & Co.'s) No. 1, Moore, C SE Sec. 16, Blk. 71, T. & P. Sur., T-6 ... Shut down for casing 900 ft.

Western States Oil Co.'s No. 1 Gardner & Mosley, Sec. 12, Blk. 18 ... Spudding.

IRION COUNTY

F. E. Webb et al's No. 1 J. M. Nutt ... Spudded and shut down.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. 2 Means ... Shut down 2,400 ft.; bailer hung.

Humble O. & R. Co.'s No. 2 Crecencio Flores, 1,130 ft. N and 850 ft. E of SW cor. Sec. 34, Blk. 58, T. & P. Sur., Twp. 8 ... Shut down 2,865 ft.; hole full water; trying to shut off water.

JONES COUNTY

Midwest Expl. Co.'s (was Campbell et al's) No. 1 L. H. Herndon, Sec. 6, M. E. P. & P. Sur., elev. 1,832 ft. ... Total depth 3,009 ft.; will shoot showings at 2,485-89 ft. and 2,558-61 ft.

Garland & Diamond's No. 1 E. D. Glynn, SE cor. Sec. 18, Deaf & Dumb Asylum Lands ... Shut down 2,430 ft.

Hutson & Weaver's No. 1-A Smith ... Total depth 1,980 ft. (cor.); shut down for casing.

W. G. Stough et al's No. 1 W. C. Bennett, Sec. 42, Orphan Asylum Sur. ... Clean. out 800 ft.

W. G. Stough and others' No. 1 J. P. Willis, J. C. Patterson Sur. No. 2 ... Shut down 1,740 ft.

Swensondale Oil Co.'s No. 1 Caton, SW NW Sec. 9, Deaf & Dumb Asylum Lands ... Show oil 3,008-20 ft.; shot 80 qts., no results; shut down 3,200 ft.

KNOX COUNTY

Deep Rock Oil Co.'s No. 1 Moore ... Shut down 900 ft.

Deep Rock Oil Co.'s No. 1 Big Four, 1,270 ft. S and 2,590 ft. W of NE cor. Sec. 31, Blk. 4 ... Run. 6-in. 3,050 ft.

LOVING COUNTY

Delaware Oil Co.'s No. 1 Lockhart & Ramsey ... Location.

Lockhart Bros.' No. 1 fee, Sec. 85, Blk. 33, H. & T. C. Sur. ... Rigging up.

Owens & Sloan's No. 1 W. D. Johnson, C SE Sec. 20, Blk. 53, T-2, T. & P. Sur., elev. 2,934 ft. ... Shut down 1,020 ft.; in litigation.

LYNN COUNTY

Elpo Oil Co.'s No. 1 Nevols, NW cor. Sec. 6, Blk. C-42 School Lands ... Shut down 630 ft.

Hart Oil Corp.'s No. 1 C. O. Edwards A-1 ... Rig. up.

MENARD COUNTY

Carpenter & Robbins' No. 1 Kothman ... 165 ft. 34.6 grav. oil at 414-15 ft.; shut in.

May & Clark's No. 1 Callan Ranch ... Drlg. 300 ft.

Renfro et al's No. 1 J. Davis ... Location.

MIDLAND COUNTY

Orbit Oil Co.'s No. 1 Moreland, C SE Sec. 17, Blk. 39, T. & P. Sur., T-1-S ... Shut down 185 ft.

Shoup et al's No. 1 Roy Parks ... Location.

MITCHELL COUNTY

Paul Teas et al's No. 1 A. C. Mills, NW cor. C. A. O'Keefe Sub. 11, J. P. Smith Sur. ... Drlg. 622 ft.

Robert Thraves' No. 1 C. Way, Sec. 91, Blk. 27, T. & P. Sur., T-1-N ... Total depth 2,508 ft.; shut down.

NOLAN COUNTY

Herbert Oil Co.'s (was McClesky and others') No. 1 Pepper, SE cor. SW Sec. 29, Blk. 22, T. & P. Sur. ... Rigged up and shut down.

Winemiller Corp.'s (was Reiter-Foster Oil Co.'s No. 1 T. E. Arledge, Sec. 217, Blk. 1, H. & T. C. Sur. ... Fish. tools 1,900 ft.

Zweifel et al's No. 1 Longbotham, C SE Sec. 130, Blk. 1, H. & G. N. Sur. ... Shut down 3,575 ft.

PECOS COUNTY

George Anderson's No. 1 Sherbine Bros. ... Drlg. 485 ft.

Buell & Hagan's No. 1 Pryor & Wilson ... New location.

Cummings et al's No. 1 Blackstone & Slaughter ... Shut down 2,528 ft., contract depth.

Diamond Pet. Co.'s No. 1 Blackstone & Slaughter ... Location.

M. C. Dibble & Hale's No. 1 Bonebrake, Sec. 115, Blk. 8, H. & G. W. Sur., elev. 2,555 ft. ... Shut down 640 ft.

Everett et al's No. 1 J. Fields ... Spudded and shut down.

Gibson Oil Corp.'s No. 1 R. R. Russell ... Drlg. 256 ft.

George A. Henshaw et al's No. 1 B. T. Corder, C SW Sec. 74, Blk. 2, C. C. S. D. Sur. ... Run. 10-in.; total depth 850 ft.

George A. Henshaw, Jr., No. 1 Schimmel, Sec. 29, Blk. 144, T. & St. L. Sur., elev. 2,780 ft. ... Hole full sulphur water 1,275-80 ft.; drlg. 2,330 ft.

Kershaw & Livingston's No. 1 Cannon ... Rig on ground.

Kirby Pet. Co. and Roxana's No. 1 W. W. Turney, NW cor. SW Sec. 11, Blk. 140, T. & St. L. Sur. ... Hole full sulphur water 975-83 ft.; shut down 1,189 ft.

Mid-Kansas O. & G. Co.'s No. 1 Pryor & Wilson, NW cor. Sec. 3, Blk. 5, T. C. R. R. Sur. ... Rigged up and shut down.

Moody Oil Corp.'s No. 1 B. T. Corder, C SW Sec. 77, Blk. 2, C. C. S. D. Sur. ... Drlg. 990 ft.

Olean Pet. Co.'s No. 1 G. N. Harral, C SW Sec. 82, Blk. R-3, G. C. & S. F. Sur., elev. 3,005 ft. ... 1,200 ft.; salt water 2,965-78 ft.; set 8-in. 2,977 ft.; drlg. 3,037 ft.

Quinby Oil Co.'s No. 1 Townsite, Sec. 1, Blk. 267, Client Addn. Sur. Fort Stockton, elev. 2,980 ft. ... Shut down 3,440 ft.

Quinby Oil Co.'s No. 2 Bennet, C NW 592, Blk. 105, G. C. & S. F. Sur., elev. 2,560 ft. ... Shut down 1,457 ft.

Quinby Oil Co.'s No. 1 A. A. Gary, 660 ft. N and 1,320 ft. E SW cor. Sec. 593, Abst. 3,009, elev. 2,551 ft. ... Shut down 700 ft.

Red Bank Oil Co.'s No. 1 Arthur Harral ... Drlg. 2,300 ft.

Robert Lee's No. 1 Joe Parker ... Rigging up.

B. J. Spikes' No. 1 George Brown ... Spudded and shut down 140 ft.

Transcontinental Oil Co.'s No. 1 Blackstone & Slaughter, Sec. 29, Blk. 129, St. L. Sur., elev. 3,539 ft. ... 250 ft. sulphur water in black sand 1,150-80 ft.; small show oil 1,510 ft.; show gas 1,540 ft.; show oil 2,080 ft.; brown sand 3,560-70 ft.; 250,000 ft. gas at 3,565 ft.; drlg. black shale 3,760 ft.

World Oil Co.'s No. 1 Kloh, Sec. 47, Blk. 48, Twp. 8, T. P. R. R. Sur., elev. 2,810 ft. ... Rigging up.

World Oil Co.'s No. 1 Serf, SW cor. NE Sec. 10, Blk. 130, T. & St. L. elev. 3,245 ft. ... Shut down water 260 ft.

Yates Pool, Pecos County

(*denotes test in extension territory.)

*Allsman & Bell's No. 5 River Red, 312 ft. N of No. 4 ... Drlg. 600 ft.

Allsman & Bell's No. 8 River Bed ... Drlg. 102 ft.

*Allsman & Bell's No. 11 River Bed ... Shut down 915 ft.

California Co.'s No. 2 Yates, Sec. 34, Blk. 194 ... Rig.

California Co.'s No. 9 Yates, Sec. 34, Blk. 194 ... Rig.

California Co.'s No. 10 Yates, Sec. 34 ... Rig.

California Co.'s No. 1 Smith, Lease 1 ... Rig.

California Co.'s No. 4 Smith, Sec. 35, Blk. 194 ... Top pay 1,647 ft.; drlg. 1,650 ft.; flowed 1,130 bbls. in 11 hrs.

California Co.'s No. 5 Smith, Sec. 35 ... Cem. 8-in. 1,453 ft.; show oil 1,448-50 ft.

California's No. 6 Smith, Sec. 35 ... Run. 10-in. 782 ft.

California Co.'s No. 7 Smith, Sec. 35 ... Drlg. 1,675 ft.

California Co.'s No. 8 Smith ... Drlg. 400 ft.

California Co.'s No. 9 Smith ... Rig.

California Co.'s No. 10 Smith ... Rig.

*Day Bros. & McKnight's No. 1 Yates, NW cor. Sec. 58, Blk 1 ... Top salt 440 ft.; shut down for casing 895 ft.

Douglas Oil Co.'s No. 2 J. T. Sellman ... Rig. up.

Gulf Prod. Co.'s No. 3 Smith-A, Sec. 28, Blk. 194 ... Slight show oil and gas 1,417 ft.

Gulf Prod. Co.'s No. 4 Smith-A ... Drlg. 1,182 ft.

Gulf Prod. Co.'s No. 5 Smith-A ... Drlg. 700 ft.

Gulf Prod. Co.'s No. 6 Smith-A ... Rig. up.

Gulf Prod. Co.'s No. 7 Smith-A ... Rig.

*Gulf Prod. Co.'s No. 4 Yates, Runnels Co. School Land ... Drlg. blue shale 785 ft.

Gulf Prod. Co.'s No. 5 Yates ... Drlg. 800 ft.

Gulf Prod. Co.'s No. 6 Yates ... Drlg. 455 ft.

Gulf Prod. Co.'s No. 7 Yates ... Drlg. 390 ft.

Humble O. & R. Co.'s No. 5 Smith-A ... Top pay 1,290 ft.; drlg. 1,475 ft.; flow. 115 bbls. per hr.

Humble Oil Co.'s No. 3 M. A. Smith-B, Sec. 101, Blk. 194 ... Drlg. 900 ft.

McMan O. & G. Co.'s No. 1 J. H. Tippett, Sec. 108, Blk. 194 ... Hole full water 240-60 ft.; drlg. 529 ft.

*Mazda and Savoy's No. 2 Smith, Sec. 24, Blk. 194 ... Location.

McMan & Marland's No. 13 Yates ... Top lime 1,271 ft.; show oil 1,315 ft.; drlg. 1,325 ft.

McMan & Marland's No. 14 Yates ... Drlg. 1,311 ft.

McMan and Marland's No. 15 Yates ... Drlg. 300 ft.

McMan and Marland's No. 16 Yates ... Rig.

Marland Oil Co.'s No. 10 Yates-A ... Flowed 300 bbls. hr. 973-1,014 ft.; shut down.

Mid-Kansas and Transcontinental's No. 10 Yates-A, Sec. 33½, Blk. 194 (N of No. 1) ... Drlg. 100 ft.

*Mid-Kansas and Transcontinental's No. 11 Yates-A, Sec. 33½, Blk. 194 (S of No. 1) ... Run. 10-in. 318 ft.

Mid-Kansas and Transcontinental's No. 12 Yates-A ... Rig. up.

Mid-Kansas and Transcontinental's No. 13 Yates-A ... Moving in tools.

Mid-Kansas and Transcontinental's No. 14 Yates-A ... Rig. up; wait. on machine.

Mid-Kansas and Transcontinental's No. 15 Yates-A ... Wait. on machine.

Mid-Kansas and Transcontinental's No. 10 Yates-B, Sec. 61, Blk. 1 ... Location.

Mid-Kansas and Transcontinental's No. 11 Yates-B ... Cellar.

*Mid-Kansas and Transcontinental's No. 12 Yates-B ... Cellar.

Mid-Kansas and Transcontinental's No. 13 Yates-B ... Topped pay 975 ft.; drlg. 1,024 ft.; flowed 155 bbls.

Mid-Kansas and Transcontinental's No. 14 Yates-B ... Top pay 926 ft.; drlg. 1,017 ft.; flowed 677 bbls.

Mid-Kansas and Transcontinental's No. 17 Yates-B ... Drlg. 310 ft.

Mid-Kansas and Transcontinental's No. 18 Yates-B ... Drlg. 562 ft.

Mid-Kansas and Transcontinental's No. 19 Yates-B ..... Location; wait. on machine.
Mid-Kansas and Transcontinental's No. 20 Yates-B ..... Drlg. 600 ft.
Mid-Kansas and Transcontinental's No. 21 Yates-B ..... Tools stuck at 70 ft.
Mid-Kansas and Transcontinental's No. 22 Yates-B ..... Cellar.
Mid-Kansas and Transcontinental's No. 23 Yates-B ..... Rig. up.
Mid-Kansas and Transcontinental's No. 4 Yates-C, Sec. 60, Blk. 1 ..... Show oil 660-65 ft.; ream. 1,000 ft.
Mid-Kansas and Transcontinental's No. 6 Yates-C ..... Wait. on machine.
Mid-Kansas and Transcontinental's No. 9 Yates-C ..... Cem. 841 ft.
Mid-Kansas and Transcontinental's No. 10 Yates-C ..... Location.
Mid-Kansas and Transcontinental's No. 2 M. A. Smith ... Drlg. 400 ft.
Mid-Kansas and Transcontinental's No. 2 Yates-D, SW part Sec. 62, Blk 1 ..... Drlg. 500 ft.
Mid-Kansas and Transcontinental's No. 7 Smith-Taylor.. Build. road.
Mid-Kansas and Transcontinental's No. 8 Smith-Taylor.. Machine being moved in.
Mid-Kansas and Transcontinental's No. 9 Smith-Taylor.. Wait. on machine.
Oregon Oil Corp.'s No. 1 Yates ..... Build. road.
Roxana Pet. Corp.'s No. 4 Tippett ..... Drlg. 1,281 ft.
Roxana Pet. Corp.'s No. 5 J. H. Tippett, Sec. 102, Blk. 194 ..... Fish. 785 ft.
Roxana Pet. Corp.'s No. 6 J. H. Tippett, Sec. 102, Blk. 194 ..... Spud. 200 ft.
Roxana Pet. Corp.'s No. 7 J. H. Tippett ..... Drlg. 350 ft.
Roxana Pet. Corp.'s No. 3 Smith, SE cor. SW Sec. 27, Blk 194 ..... Drlg. 755 ft.
Roxana Pet. Corp.'s No. 4 Smith ..... Drlg. 875 ft.
Roxana Pet. Corp.'s No. 5 M. A. Smith, Sec. 27, Blk. 194.. Drlg. 200 ft.
Simms Oil Co.'s No. 4 Smith, Sec. 103, Blk. 194 ..... Drlg. 401 ft.
Simms Oil Co.'s No. 5 Smith ..... Rig. up.
Simms Oil Co.'s No. 6 Smith ..... Drlg. 250 ft.

PRESIDIO COUNTY

Headlock & Miller's No. 1 Tootle Est., Sec. 123, Blk. 3, D. & P. Sur., elev. 2,912 ft. ..... Salt water 2,610 ft.; total depth 3,003 ft.; shut down for orders.
Pinto Canyon Oil Co.'s No. 1 Fields, 1,760 ft. S and E NW cor. Sec. 74, Blk 2, D. & P. Sur. ..... Location.

REAGAN COUNTY

Henshaw & Camp's No. 1 University, Sec. 14, Blk. 49, University Land, elev. 2,772 ft. ..... 250 ft. sulphur water at 800 ft.; drlg. 2,140 ft.
Skelly Oil Co.'s No. 1 University, SW cor. Sec. 33, Blk. 4, University Land ..... Top salt 1,340 ft.; fishing 2,795 ft.; shut down.
Texon O. & L. Co.'s No. 1-B University, Group 1 ..... Top pay 6,284 ft.; total depth 6,590 ft.; 3,800 ft. of 38.7 grav. oil in hole; clean. out.
White et al's No. 1 Shofner & Sterling, SE cor. NW Sec. 10, 2 m. N of Big Lake ..... Shut down 905 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Show oil 1,105-10 ft.; drlg. 1,300 ft.
Grisham-Hunter Corp.'s No. 1 Rathge & Connor ..... Rig.
David R. Thompson's No. 1 A. A. Eddins ..... Fish. bit 4,170 ft.; shut down.
World Oil Co.'s No. 1 Biggs, C SE Sec. 65, Blk. 112, Public School Land Sur., elev. 3,068 ft. ..... Shut down 1,637 ft.
World Oil Co.'s No. 1 Duff, elev. 2,753 ft. ..... Top Delaware lime 4,185 ft.; hole full brackish salt water 4,368-4,500 ft.; plug. back to 4,260 ft. to shoot 70 qts. at 4,185-4,223 ft.

RUNNELS COUNTY

Empire G. & F. Co.'s No. 1 C. C. Clay ..... Drlg. 2,050 ft.
Gibson & Johnson's No. 1 Harris Est., Juliana Voske Cabrera Sur. ..... Location.
Gibson & Johnson's No. 1 H. P. Serratt, C SE NW Sec. 150, E. T. R. R. Sur. ..... Rig. up.
Kennedy et al's No. 1 J. E. Tally ..... Shut down 1,720 ft.
May et al's No. 1 J. M. Schneider, John Wall Sur. ..... One-half baller salt water 1,031 ft.; shut down 1,056 ft.
Miles Oil Co.'s No. 1 Charles Ray, Sec. 21, T. & N. O. Sur. ..... Cellar.
Miles Oil Co.'s No. 1 L. S. Lawhon, NE cor. Sec. 68 ..... Show gas 960-80 ft.; shut down 2,250 ft.
Noble O. & G. Co.'s No. 1 Sims, Sec. 12, J. J. McHenry Sur. ..... Hole full sulphur water 2,710-20 ft. and hole full salt water 2,820 ft.; drlg. 3,172 ft.
Royal Pet. Co.'s No. 1 A. C. Willingham ..... Rig. moving in tools.
Swensondale Oil Co.'s No. 1 E. A. Werner ..... Shut down for 8-in. 1,850 ft.
Owenwood Oil Corp.'s No. 1 H. B. Fowler ..... Location.
Watchorn O. & G. Co.'s No. 1 J. L. King ..... Drlg. 1,692 ft.

SCHLEICHER COUNTY

Beavers & Leath et al's No. 1 J. A. and W. T. Whitten, C NW Sec. 35, Blk. 11, T. O. Sur. ..... Shut down 400 ft.
Thomas Grey et al's No. 1 Ball Robinson, C NW Sec. 25, Blk. M. G. H. & S. A. Sur. ..... Sulphur water 2,125 ft.; hole full water 2,160-80 ft. and 2,935 ft.; total depth 3,090 ft.; cleaning out.

SCURRY COUNTY

J. B. Mims et al's No. 1 J. J. Koonsman, Sec. 220, Blk. 2, H. & T. C. Sur. ..... Rig.

STERLING COUNTY

Orr et al's No. 1 Neal Reed, CNL Sec. 15, Blk. 30, W. & N. W. Sur. ..... Shut down 1,390 ft. (cor.).

STONEWALL COUNTY

Peer Oil Corp. and Producers Oil Co.'s (was J. P. Johnson's) No. 1 R. P. Morrow ..... Hole full water 2,625-90 ft.; set 10-in. 2,700 ft.; shut down orders 3,038 ft.

TAYLOR COUNTY

A. J. Brown et al's No. 1 Henslee, NE cor. Sec. 5, Blk. 4, S. P. R. R. Sur. ..... Drlg. 2,309 ft.; wet hole.
Dorning & Perrine's No. 1 J. A. Hammer, C N 100 acres, Sec. 23, Blk. 19, T. & P. Sur., elev. 1,904 ft. ..... Shut down 455 ft.
Gilbert Johnson and Day Bros.' No. 1 C. M. Brown, Sec. 1, Blk. 6, T. & P. Sur. ..... Shut down 835 ft.
Owen & Sloan's No. 1 Lattimer, Sec. 14, Blk. 9, T. & P. Sur. ..... Fish. 2,605 ft.
Roeser & Pendleton's No. 1 Sam Hutman, C W half NW Sec. 64, Blk. 5, T. & P. Sur. ..... Water sand 2,222 ft.; total depth 2,945 ft.; cleaning out.

TERRELL COUNTY

Deep Rock Oil Co.'s No. 1 H. C. Nolke, Sec. 4, Blk. A-2, T. C. R. R. Sur. ..... Cellar.
Humble Oil Co.'s No. 1 University, Sec. 15, Blk. 34 ..... Spudded and shut down.
Milham Exploration Co.'s No. 1 Bassett, CNL Sec. 99, Blk. Y, W. H. Robertson Sur. ..... Shut down 1,025 ft.

TERRY COUNTY

Kingsland O. & P. Co.'s No. 1 Brownsfield, C NW SW SW Sec. 7, Blk. 1-A, E. L. R. R. Sur. ..... Slight show gas 2,230 ft.; run. 6-in. 3,207 ft.

TOM GREEN COUNTY

George Amery's No. 1 Wilkey, C SW Sec. 3, B. A. L. Sur. ..... Location.
Cox et al's No. 1 Llano ..... Total depth 470 ft.; shut down.
Fitzgerald et al's No. 1 Bennett ..... Drlg. 1,715 ft.
Marland Oil Co.'s No. 1 J. W. Johnson, C SE, Sec. 6, B. B. Sanderson Sur. ..... Hole full water 2,020-45 ft.; fished out line 2,830 ft.; drlg. 2,700 ft.
Marland Oil Co.'s No. 1 J. W. Johnson-A ..... Fished out tools 2,150 ft.; drlg. 2,200 ft.
Tulsa Oil Co.'s No. 1 Adams, C SW Sec. 163, Blk. 11, S. P. R. R. Sur. ..... Shut down lime 1,020 ft.
Haulbert et al's No. 1 Johnson ..... Shut down 665 ft.

UPTON COUNTY

Mark Curtis et al's (was Hultz et al's) No. 2 Giddings, 5,336 ft. S and 6,678 ft. E of NW cor. Throckmorton Co. School Land, League 1, elev. 2,757 ft. ..... Shut down 630 ft.
Southern C. O. P. Co.'s No. 1 C. W. Hobbs ..... Flowed sulphur water 2,240-80 ft.; drlg. 2,561 ft.
The Texas Company and Cordova Union's No. 1 Union Land, Sec. 23, Blk. 35, H. & T. C. ..... Top pay 2,098 ft.; swabbed 60 bbls. in 36 hrs. at 2,271 ft., 2 per cent water; shut down 2,318 ft.; will deepen.
Texas Pacific C. & O. Co.'s No. 11 J. F. Lane-A lease, Sec. 5 ..... Swabbed 104 bbls. first 24 hrs. at 1,910-2,067 ft.; will deepen.
Tulsa Drlg. Co.'s No. 1 W. A. Chaney, Sec. 18, Blk. 3, M. K. T. Sur. ..... Top salt 670 ft.; show oil 2,090 ft.; total depth 2,435 ft.; plugging back to oil show.
Wise & Jackson's No. 1 J. H. Porter, SW cor. SW SW Sec. 184, Blk E, elev. 2,592 ft. ..... Top pay 3,419 ft.; total depth 3,517 ft., gray lime; shut down.

VAL VERDE COUNTY

A. Blume et al's No. 1 Moore Est., Sec. 183, J. Mitchell Sur., elev. 953 ft. ..... Shut down 3,000 ft.
Curso Williams' No. 1 Holman, NE NE Sec. 5, Blk. N, G. H. & S. A. Sur. ..... Shut down 2,940 ft.
East Del Rio Oil Co.'s No. 1 Russell, SE cor. Sec. 183, Del Rio Town Sur., elev. 941 ft. ..... Total depth 3,190 ft.; shut down.
Magnolia Pet. Co.'s No. 1 Whitehead, Sec. 81, D. G. C. & S. F. Sur., elev. 1,770 ft. ..... Drlg. 5,450 ft.
Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I. & G. N. Sur., elev. 1,175 ft. ..... Shut down 3,900 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I. & G. N. Sur, elev. 2,130 ft. ..... Gas sand 2,491-2,520 ft.; tested 125,750 ft.; gas; reset 8-in. 2,511 ft.; drlg. 3,820 ft.
W. B. Thraves et al's No. 1 W. E. Wilson ..... Spudding.

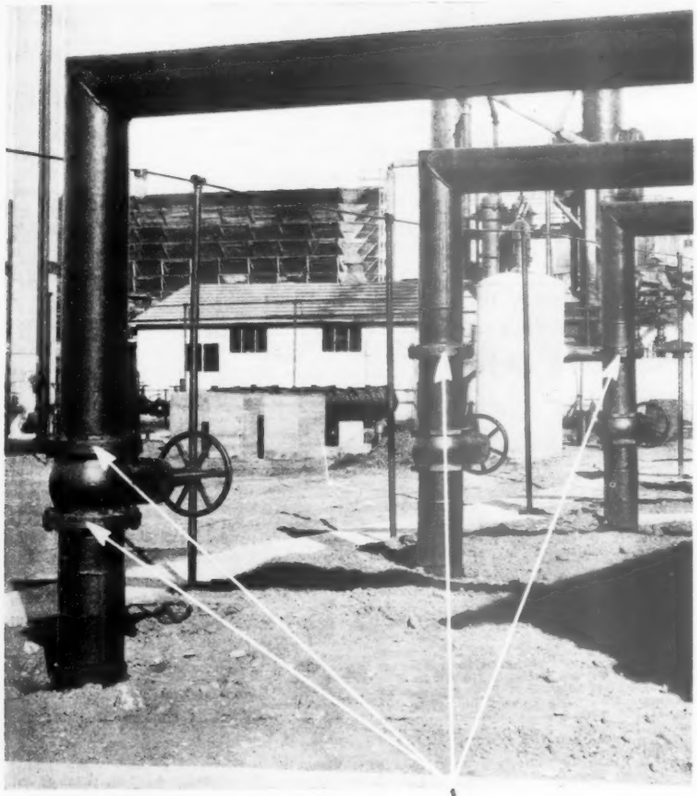
WARD COUNTY

Selby Oil Co. et al's No. 1 A. G. Dooley et al ..... Rig. up cable tools.

WINKLER COUNTY

Amerada Pet. Corp.'s No. 1 J. B. Walton, SW cor. NW Sec. 48, Blk. 26, elev. 2,833 ft. ..... Top salt 1,086 ft.; 2,500,000 ft. gas 1,700-08 ft.; killed gas with 3½ tons baroid; cored brown lime carrying oil 2,334 ft.; show gas 2,400 ft.; blew tools up in hole; fished out and drilled to 2,411 ft. where another pocket of gas again caused fish. job; unscrewed pipe one joint above tools; now shut down.
Atlantic O. P. Co.'s No. 1 Ida Hendrick, SE cor. W half NE Sec. 44, Blk. 26 ..... Show gas 2,770 ft.; top pay 2,830 ft.; fishing bit 2,936 ft.; aver. 246 bbls. past week.
Atlantic O. P. Co.'s No. 2 Grisham-Hunter ..... Drlg. 2,801 ft.
Atlantic O. P. Co.'s No. 3 Grisham-Hunter ..... Topped salt 1,315 ft.; drlg. 2,180 ft.
Atlantic O. P. Co.'s No. 4 Grisham-Hunter ..... Rig.
Atlantic O. P. Co.'s No. 1 Grisham-Hunter-C (was Lemar) ..... Drlg. 2,560 ft.
Atlantic O. P. Co.'s No. 1 Ida Hendrick-D ..... Top pay 2,870 ft.; total depth 3,012 ft.; aver. 2,800 bbls. last week; to drill deeper.
Atlantic O. P. Co.'s No. 2 Ida Hendrick-D ..... Drlg. 2,760 ft.
Atlantic O. P. Co.'s No. 1 Grisham-Hunter-E ..... Drlg. 2,362 ft.
Atlantic O. P. and Collett's No. 1 Ida Hendrick-F ..... Spud. 55 ft.
V. T. Bolin et al's No. 1 Brown ..... Spudded and shut down.
Magnolia Pet. Co.'s (was G. M. Church et al's) No. 2 Ida Hendrick ..... Show oil 2,750 ft.; top pay 2,865 ft.; shut down 2,955 ft.; flowing 60 bbls. hr., 50 per cent b.s.
Magnolia Pet. Co.'s No. 3 Ida Hendrick ..... Cem. 8-in. 2,425 ft.; drlg. 2,520 ft.
Cranfill Bros. and California Co.'s No. 1 M. J. Bashara, at cor. Secs. 10, 11, 22 and 23, School Blk. 77 ..... Total depth 3,503 ft. (s.l.m.); shut down for orders.
Cranfill & Reynold's No. 1 Grisham-Hunter-B, Sec. 35, Blk. B-5 ..... Drlg. 2,760 ft.; show oil 2,650-55 ft.
Cranfill & Reynolds' No. 1 Hendrick-C ..... Drlg. 650 ft.
Eastland Oil Co. and Arnold's No. 1, Sec. 35, Blk. B-5 .. Show oil 2,675 ft.; drlg. 2,680 ft.
Gulf Prod. Co.'s No. 8 T. G. Hendrick, Sec. 34 ..... Drlg. 345 ft.
Gulf Prod. Co.'s No. 9 T. G. Hendrick ..... Rig.
Gulf Prod. Co.'s No. 10 T. G. Hendricks, Sec. 34 ..... Location.
Humble O. & R. Co.'s No. 1 T. G. Hendrick, NW cor. NE Sec. 34, Blk. B-5, Public School Land, elev. 2,816 ft. ..... Total depth 2,763 ft.; fished out one bit; gas which had been killed broke loose again; trying to drill by tools 2,743 ft.
Humble O. & R. Co.'s No. 3 Hendrick, Sec. 34, Blk. B-5 .. 5,000,000 ft. gas from 2,195 ft.; drlg. 2,815 ft.
Humble O. & R. Co.'s No. 5 Grisham-Hunter ..... Drlg. 850 ft.
Humble O. & R. Co.'s No. 2 Ida Hendrick-B ..... Rig on ground.
Independent O. & G. Co.'s No. 3 Grisham-Hunter, Sec. 34.. Location.
Independent O. & G. Co.'s No. 4 Grisham-Hunter ..... Location.
Independent O. & G. Co.'s No. 5 Grisham-Hunter ..... Cem. 12½-in. at 305 ft.
Independent O. & G. Co.'s No. 6 Grisham-Hunter ..... Drlg. 325 ft.
Independent O. & G. Co.'s No. 7 Grisham-Hunter ..... Spudding.
Independent O. & G. Co.'s No. 8 Grisham-Hunter ..... Rotary derrick.
Independent O. & G. Co.'s No. 2 Hendricks-A, elev. 2,822 ft. ..... Top pay and total depth 2,815 ft.; aver. 734 bbls. past week; will prob. fish out tools and deepen.
Independent O. & G. Co.'s No. 1 Vardeman-B ..... Top salt 1,775 ft.; cem. 6⅝-in. at 2,310 ft.
Independent O. & G. Co.'s No. 2 Vardeman-B ..... Rig. up rotary.
Independent O. & G. Co.'s No. 3 Vardeman-B ..... Build. derrick.
Liner Drlg. Co.'s No. 1 Seth-Campbell, NE cor. Sec. 2, Blk. B-5 ..... Shut down 450 ft.
Landreth Prod. Corp.'s No. 1 Hendrick-A, SE cor. SW Sec. 29, Blk. B-5 ..... Total depth 3,013 ft.; aver. 36 bbls. daily past week; clean. out to deepen; fish. for bit.
Landreth and Roxana's No. 2 Ida Hendrick-A, Sec. 29, Blk. B-5 ..... Partly rigged and shut down.
Landreth and Roxana's No. 3 Ida Hendrick-A, Sec. 29, Blk. B-5 ..... Drlg. 900 ft.
Magnolia Pet. Co.'s No. 4 Ida Hendrick ..... Cem. 6⅝-in. at 2,494 ft.
Magnolia Pet. Co.'s No. 5 Ida Hendrick ..... Drlg. 718 ft.
Murchison Oil Co. et al's (was Marland Oil Co.'s) No. 1 Grisham-Hunter-B ..... Location.
Murchison Oil Co. et al's (was Marland Oil Co.'s) No. 2 Grisham-Hunter-B (formerly No. 3-B) ..... Aver. 320 bbls. 2,890-3,050 ft.; clean out to shoot.
Murchison Oil Co. et al's (was Marland Oil Co.'s) No. 4 Grisham-Hunter-B ..... Shut down 2,855 ft.
Mining & Engineering Co.'s No. 1 T. G. Hendrick, Sec. 10, Blk. B-12 ..... Partly rigged and shut down.
Murchison Oil Co. and Cranfill Bros.' No. 2 Grisham-Hunter ..... Location.
Murchison Oil Co. and Cranfill Bros.' No. 4 Grisham-Hunter ..... Location.
The Texas Company's (was Pure Oil Co.'s) No. 2 Hendrick, elev. 2,827 ft. ..... Top salt 1,518 ft.; top lime 2,390 ft.; spraying oil with 15,000,000 ft. gas 2,657-2,825 ft.; flowed 85 bbls. first hr. from 2,657-2,880 ft.
The Texas Company's (was Pure Oil Co.'s) No. 3 Hendrick, NE cor. SW Sec. 41, Blk. B-5 ..... Standardizing 2,360 ft.
The Texas Company's (was Pure Oil Co.'s) No. 1 Hendrick-B, NE cor. SE Sec. 34, Blk. B-5 ..... Show gas 2,350-60 ft.; show oil 2,380 ft.; 15,000,000 ft. gas at 2,490 ft.; more gas 2,564 ft.; 40,000,000 ft. gas at 2,720 ft.; trying to kill gas.
The Texas Company's (was Pure Oil Co.'s) No. 2 Hendrick-B ..... Top lime 2,387 ft.; top pay 2,808 ft.; flow. small heads; drlg. 2,855 ft.
The Texas Company's (was Pure Oil Co.'s) No. 3 Hendrick-B ..... Cem. 8-in. 2,438 ft.; 4,000,000 ft. gas 2,600 ft.; drlg. 2,845 ft.
The Texas Company's (was Pure Oil Co.'s) No. 4 Hendrick-B ..... Build. rig.
The Texas Company's No. 1 Grisham-Hunter-C ..... Rig on ground.
Republic Prod. Co.'s No. 1-A Grisham-Hunter-B, SW cor. E half SE Sec. 41, Blk. B-5 ..... Drlg. plug. 2,008 ft. and shut down.
Republic Prod. Co.'s No. 2 Grisham-Hunter-B ..... Drlg. 2,590 ft.
Roxana Pet. Corp.'s No. 1 Grisham-Hunter-A, SW cor.

E half NW Sec. 45, School Blk. 26	Top lime 2,428 ft.; little gas; show oil and gas 2,570 ft.; increase gas at 2,597 ft.; spraying oil 2,760-65 ft.; 65,000,000 ft. gas 2,800-01 ft.; blew tools up in hole; gas broke gauge at 59,500,000 ft.; started spraying little oil Nov. 21; blew up separator Dec. 14; sprayed 366 bbls.; now drlg. 2,817 ft. and aver. 956 bbls. per day oil increase at 2,801-09 ft.
Roxana Pet. Corp.'s No. 1 Grisham-Hunter-B, SW cor. S half SE Sec. 29, Blk. B-5	Top lime 2,657 ft.; show oil and gas 2,630 ft.; fishing bailer 3,010 ft.
Roxana Pet. Corp.'s No. 2 Grisham-Hunter-B	Drlg. 200 ft.
Roxana Pet. Corp.'s No. 2 Grisham-Hunter-C, SE cor. N half NW Sec. 29, Blk. B-5	Top salt 1,405 ft.; cem. 8¼-in. at 2,536 ft.
Roxana Pet. Corp.'s No. 3 Grisham-Hunter-C	Drlg. 750 ft.
Roxana Pet. Corp.'s No. 4 Grisham-Hunter-C	Drlg. 450 ft.
Roxana Pet. Corp.'s No. 5 Grisham-Hunter-C	Drlg. 300 ft.
Roxana Pet. Corp.'s No. 1 Grisham-Hunter-D, SW cor. S half NE Sec. 41, Blk. B-5	Show oil and gas 2,504 ft.; drlg. 2,634 ft.
Roxana Pet. Corp.s No. 2 Grisham-Hunter-D	Spudding.
Sheldon & Burden's No. 1 Ida Hendrick, SW cor. SE Sec. 28, Blk. B-5 (10-a. tract)	Top salt 1,260 ft.; cem. 6-in. at 2,610 ft. in lime (s.l.m.); drlg. hard lime 2,656 ft.
Southern C. O. P. Co.'s No. 2 Ida Hendrick T-88-B	Total depth 2,659 ft.; cem. 6-in. in lime; stand. cem.
Southern C. O. P. Co.'s No. 2 T-89 Grisham-Hunter-A, Sec. 35, Blk. B-5	Standardizing 2,301 ft.
Southern C. O. P. Co.'s No. 3 T-89-A Grisham-Hunter-A	First gas 2,400 ft.; 3,000,000 ft. gas 2,415-20 ft.; cem. 6-in. casing.
Southern C. O. P. Co.'s No. 4 T-89-A Grisham-Hunter-A	Rig. up rotary.
Texon O. & L. Co.'s No. 2 Grisham-Hunter-A	5,000,000 ft. gas 2,260-2,500 ft.; 15,000,000 ft. gas 2,646-56 ft.; total depth 2,725 ft.; killing gas to fish. tools; 50,000,000 ft. gas.
Texon O. & L. Co.'s No. 3 Grisham-Hunter-A, NW cor. W half SE Sec. 41, Blk. B-5	Drlg. plug. 2,140 ft.
Texon O. & L. Co.'s No. 1 Grisham-Hunter-B, NW cor. W half SW Sec. 45, School Blk. 26	Drlg. 2,340 ft.
Texon O. & L. Co.'s No. 2 Grisham-Hunter-B	Cem. 8-in. 2,506 ft.
White Eagle O. & R. Co.'s (was Gibson & Johnson's) No. 1 P. A. Lock, 1,320 ft. W of NE cor. Sec. 30, Blk. 74, NW of discovery well, elev. 2,830 ft.	Total depth 3,260 ft.; fish. for bailer.
Southern C. O. P. Co.'s No. 1 Ida Hendrick 3-T-67-A, C SW NW NE Sec. 4, Blk. B-12, elev. 2,784 ft.	Top lime 2,638 ft.; slight show oil 3,000-08 ft.; filled up 1,500 ft. sulphur water at 3,065-72 ft.; plugged back to 3,050 ft. but did not shut off water; water now shut off; shut down waiting orders.
Southern C. O. P. Co.'s No. 2 Ida Hendrick 3-T-67-A	Standardizing 2,646 ft.
Southern C. O. P. Co.'s No. 2 T-67 Ida Hendrick-F	Drlg. 1,390 ft.
Southern C. O. P. Co.'s No. 3 T-67 Ida Hendrick-F	Drlg. 400 ft.
Southern C. O. P. Co.'s No. 4 T-67 Ida Hendrick-F	Drlg. 350 ft.
Southern C. O. P. Co.'s No. 5 T-67 Ida Hendrick-C	Fish. tools 2,875 ft.
Southern C. O. P. Co.'s No. 1 T-67 Hendrick-B, NE cor. SE Sec. 24, Blk. 26	Top salt 2,210 ft.; top lime 2,645 ft.; total depth 2,648 ft.; drlg. 2,700 ft.
Southern C. O. P. Co.'s No. 1 Hendrick 3-T-68-A, SW cor. W half NW Sec. 35, Blk. B-5	Top salt 1,365 ft.; top lime 2,303 ft.; top pay 2,440 ft.; shut down 2,740 ft.; no production; tools bridged hole.
Southern C. O. P. Co.'s No. 2 Hendrick 3-T-68-A	Standardized 2,288 ft. and shut down.
Southern C. O. P. Co.'s No. 3 Hendrick 3-T-68-A	First gas 2,400 ft.; 8,000,000 ft. gas 2,420 ft.; fish. tools.
Southern C. O. P. Co.'s No. 1 T-88 Ida Hendrick-C, NW cor. Sec. 28, Blk. B-5	6,000,000 ft. gas 2,665 ft.; fish. tools 2,875 ft.
Southern C. O. P. Co.'s No. 2 T-88 Hendrick-C, Sec. 28, Blk. B-5	Top pay 2,805 ft.; drlg. 2,958 ft.; flow. 1,375 bbls.
Southern C. O. P. Co.'s No. 3 Ida Hendrick, T-88-C	Top pay 2,795 ft.; drlg. 2,880 ft.
Southern C. O. P. Co.'s No. 4 Ida Hendrick, T-88-C	Cem. 6-in. 2,586 ft. and shut down.
Southern C. O. P. Co.'s No. 5 Ida Hendrick, T-88-C	Standardizing 2,528 ft.
Southern C. O. P. Co.'s No. 6 Ida Hendrick, T-88-C	Cem. 6-in. 2,528 ft.
Southern C. O. P. Co.'s No. 7 Ida Hendrick, T-88-C	Standardizing 2,435 ft.
Turman & Maxwell's No. 1 Ida Hendrick	Shut down for tankage 2,879 ft.; flows about 35 bbls. and 5,000,000 ft. gas.
Turman & Maxwell's No. 2 Ida Hendrick	10,000,000 ft. gas 2,865 ft.; shut down.
Turman & Maxwell's No. 3 Ida Hendrick, E half NE Sec. 29, Blk. B-5	Shut down 2,585 ft.
Turman & Maxwell's No. 4 Ida Hendrick	Drlg. 200 ft.
Southern C. O. P. Co.'s No. 1 Ida Hendrick, T-88-G, SW SE Sec. 28, Blk. B-5	Location; moved material away.
Southern C. O. P. Co.'s No. 1 Ida Hendrick, T-88-I, SE cor. E half NE Sec. 30, Blk. B-5	Drlg. 1,849 ft.
Southern C. O. P. Co.'s No. 1 E. G. Hutchings, T-90, NE cor. E half SE Sec. 47, Blk. 26	Drlg. 210 ft.



Make Them

With McKIM

METALLIC-ASBESTOS GASKETS

The Original Oil Country Gaskets for Gasoline Plants, Refineries, Vapor Lines, etc.

McCord Radiator & Mfg. Co.

DETROIT

GEN. CHARLES MILLER, OIL PIONEER, DIES

FRANKLIN, Pa., Dec. 24.—Gen. Charles Miller, 84 years old, retired oil man and Franklin's best known resident, died this week of heart disease in his home in Miller Park. He had been in a coma for several days.

General Miller was a founder of the Galena Signal Oil Co. and was one of the pioneer oil producers of this district. Until 11 years ago he was president of the Galena Signal Oil Co., and his son, J. French Miller, is now secretary-treasurer. He was president of the Lake Erie, Franklin & Clarion Railroad, which he built 22 years ago; president of the Franklin Railway Oil Co. and of the General Manifold Printing Co. In Franklin, General Miller planned and developed Miller Park, a residential district; operated the famous Miller-Sibley stock farm of a quarter century ago, and had many other interests. Even lately his Rosemont farm cattle, on tour, took many thousands of dollars in prizes at eastern exhibitions. His Miller Bible class, once numbering a thousand members, was world famous.

Surviving are three sons, J. French Miller, Clarence Miller of Franklin, Maj. C. J. S. Miller of France, and two daughters, Mrs. Metta Miller Rochester of Tarrytown, N. Y., and Mrs. S. A. Megeath, Ardsley-on-the-Hudson.

PENNSYLVANIA MARKETS

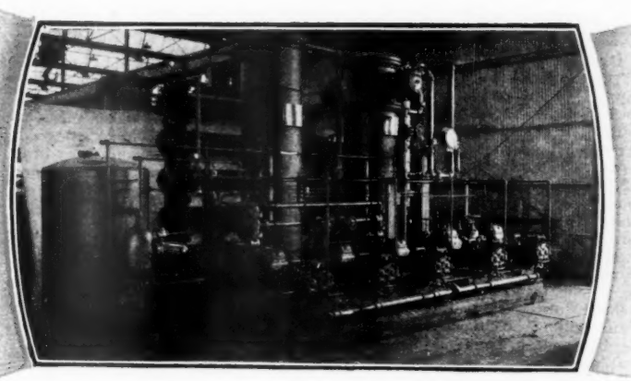
OIL CITY, Pa., Dec. 26.—The past week was a quiet one in the Pennsylvania refinery district. Gasoline and naphtha are still the same, there being no change in price. Kerosene remained firm during the week. Wax was unchanged. There was no demand for neutrals but prices were not cut. Bright stocks and cylinder stocks were still weak and without demand. Fuel oil was likewise slow.

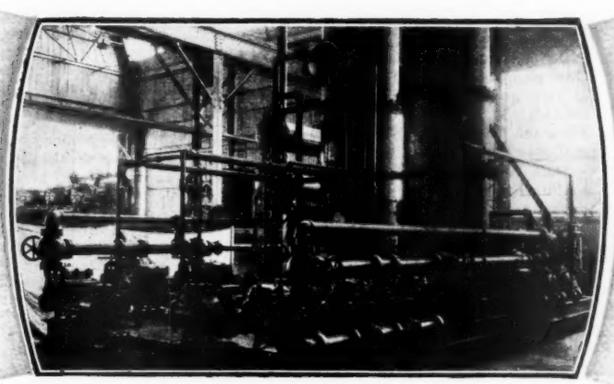
J. V. HORRIGAN DEAD

Joseph V. Horrigan, president of the Horrigan Boiler Works, died in Tulsa on Tuesday, December 27, after a 10 days illness of influenza. Mr. Horrigan came to Tulsa 20 years ago from Bradford, Pa. He is survived by his widow and one son, Joseph, Jr.; two brothers, Bernard E. Horrigan of Tulsa and Fred Horrigan of Freeport, L. I.; and two sisters.

IN STOCK

FOR IMMEDIATE DELIVERY





BRAUN

PORTABLE • MOBILE ABSORPTION PLANTS

GASOLINE CAPACITIES 3600 TO 30,000 GALLONS PER 24 HOURS

C. F. BRAUN & CO.

MANUFACTURING MECHANICAL ENGINEERS

ALHAMBRA - CALIFORNIA

TULSA DALLAS NEW YORK

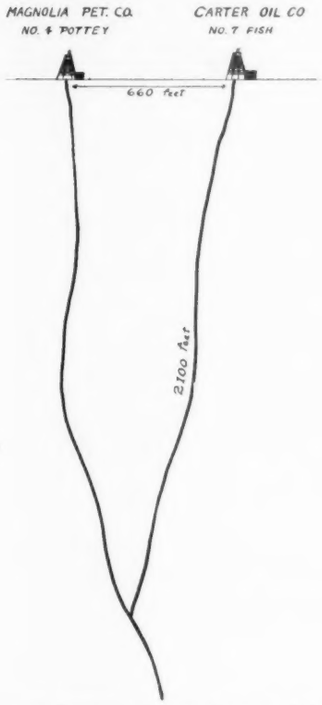
HOLES RUN TOGETHER IN LITTLE RIVER WELLS

(Continued from Page 78)

a well producing 3,000 bbls. when it first tapped the sand would have its production drop over 80 per cent when the offset well reached the sand. If two holes in the field have covered the intervening space between the courses of their holes, how many of the 1,050 wells have finished within a very small distance of each other?

The illustration showing the fate of the geologist who attempted to work out the Seminole formations gives the most easily interpreted idea of the baffling subsurface conditions one encountered in that field. Richard Hughes (the creator of the illustration) has had ample experience in working out the formations of that particular part of Oklahoma and his darwing so perfectly illustrates the difficulties which confront the unfortunate rock hound who must battle the Seminole situation that it might be considered like the old saying of "half joke and whole earnest."

Since it is much farther around the arc of a circle than it would be in a straight line between the points of the arc, the measurements of wells in Seminole must be accepted with a grain of salt, and special attention paid to sand conditions as revealed by the measurements. It is sufficient to state that some excellent wells have been found in a part of the field which has showed very



Sketch showing the assumed course of the two wells and their meeting point

plainly a "low" when measured, and the steady output and prospective yield per acre which these low spots indicate, give ample evidence of good producing conditions, regardless of structural position.

Survey Suggested

A complete survey of the wells in the Seminole Field by means of a device which records the variation of the hole would be extremely interesting, but by the time that it would be completed, the Seminole Field would have been 10 years old. To apply this device upon several wells in each pool of the field would be the means of obtaining a much more definite picture of the underground conditions as they really are, and it is to be hoped that at some future time this may be accomplished.

When a survey of a deep well in California was made, it was found that in reaching a depth of some 6,300 feet, the well made many turns in all directions from vertical. In roaming all over the territory, this well covered at different stages 9 acres of ground. It has been reported that in the Tonkawa Field of Oklahoma, a similar survey of a Wilcox sand well was made. The depth of the Wilcox in this field is 4,200 feet, and while no official figures are available upon this test (it was recently completed and the calculations have not been checked) it is believed that it passed under 5 acres in its course from the grass roots to the sand. It was made on a well which was the corner location of the lease, and in making the survey, it was found that the well passed under two of the three offsets across the lease line. If these figures are correct then the Seminole wells must also be subjected to similar actions, for they were drilled in a greater rush than the Tonkawa wells.

How Wells Collided

The discovery that the two Seminole wells ran together was made after the Carter Oil Co. experienced trouble in making any hole below 2,100 feet in its well on the Fish lease. Across the fence, the Magnolia Petroleum Co.'s No. 4 Pottey had started drilling first. The Magnolia well was 2,800 feet deep, the Carter well, 2,100 feet. The first sign of trouble came when the Carter lost its mud circulation, and the mud laden fliud started coming out of the Magnolia's hole. It was immediately supposed that the Carter well had drilled into some exceptionally porous sand or formation which extended to the spot where the Magnolia was drilling. Neither well had any casing in, and it was naturally thought that the mud-laden fluid entered the Carter's well, dropped down until the porous formation was found, and travelling along this stratum, entered the Magnolia well.

Numerous experiments were tried in an effort to remedy this trouble, and all to no avail. Still not realizing that the holes had coincided, the management of both companies decided to alternate in drilling, and again the Magnolia well was started. It drilled on with no trouble. Then the Carter well was started again, and once more it could make no progress.

Both wells were started drilling simultaneously again, and the Carter well experienced much difficulty in making the tools turn. When they were pulled from the hole it was found that a cone from a rock bit was lost from the drill string. The Magnolia well was started once more, and the Carter began fishing for the lost rock cone. The Magnolia then experienced much trouble with the drilling, and when fishing tools were strung up, they extracted the Carter's rock cone out of the Magnolia's well.

For the purpose of checking the operations, the Magnolia tools were run into the well, and then the Carter's drill string was again run in. After several attempts at drilling, both drill strings were withdrawn, and inspected. The Magnolia drill pipe at 2,100 feet plainly showed the marks of the Carter rock cones, and the Carter's cones held tiny fragments of drill pipe around its teeth. All doubt was then dispelled, and both holes were ordered plugged and abandoned.

It seems peculiar that two wells which had a latitude of 20 acres to move around, could possibly have two 10-inch holes center so perfectly. There was such an abundance of room to spare.

SMALL REVERSING SWITCHES

The General Electric Co. announces three small switches for miscellaneous application as across-the-line reversing switches for small motors. These switches bear the designations CR 7009-F-1, F-2 and B-10. All these switches are enclosed in a new type, drawn-shell enclosing case. They will find application wherever a small magnetic reversing switch is required, typical applications being machine tools, motor-operated valves, motor-operated windows, doors, etc.

EXPECT GAIN IN STEEL OUTPUT; MORE LINE PIPE BUSINESS PLACED

By B. E. V. Luty

PITTSBURGH, Pa., Dec. 24.—There is a mixture in the steel market of year-end dullness in some lines and of greater activity in other lines as a reflection of the near advent of the new year. In lines that are bought in a hand-to-mouth way there is less buying. In sheets there is very active contracting for the first quarter, under the stimulus of a price advance the sheet mills are making. Railroads are inquiring quite freely for freight cars and are preparing to repair cars at a greater rate than recently.

The Missouri Pacific has ordered 47,850 tons of rails, which brings the annual rail buying movement up to about 1,500,000 tons to date, including about 750,000 tons in October, 650,000 tons in November and 200,000 tons thus far this month. Orders still to be placed, in the remainder of this month or early in the new year, are estimated at about 150,000 tons. This would make the total movement between 1,600,000 and 1,700,000 tons, or about the same as movements of one year and two years ago. Advance specifications were filed on some of the orders and rail mills now have quite a fair rate of operation, which helps to balance decreases in steel production in other directions.

In bars, shapes and plates there have been fairly heavy specifications on contracts which expire at the end of this month, prices in such contracts being lower than the 1.80-cent basis recently set for the first quarter of the new year, and this also helps to swell mill operations. In some other lines mill operations are lighter.

Rate of Operation

The general rate of operation of the steel industry, as measured by ingot production, is about the same as that prevailing since July 1, but there are distinct chances that December as a whole will show a slightly higher average. There will be practically no curtailment of production around the holidays, Christmas falling on Monday and thus simply postponing the weekly start by a day or a day and a half.

Total steel production of the year will be 7 to 8 per cent under that of 1926, which was record high. Next year has approximately even chances of going a trifle above 1926 or a trifle below 1927 without its making much difference. The more natural inference is that there will be a gain.

What is certain is that steel production will increase sharply during the first three months of the new year. It always does, or at any rate it has done so in each of the past five years. Such a swing appears to be entirely seasonal. March production may be guessed at about one-third above the recent rate.

Price Situation

The record production of 1926 was scarcely more than 80 per cent of present steel making capacity, hence no scarcity of steel is at all likely. This means obviously that steel prices, about which producers have been complaining, cannot rise of their own initiative, and if producers want higher prices they must use better marketing methods and exercise more co-operation. This they are doing in bars, shapes and plates. Bethlehem Steel Co.'s setting up of eastern basing prices on these products December 10 was a highly constructive move in this direction, providing a more clear cut and logical system.

In some finished steel lines in which there are many relatively small companies, sheets and strips in particular, there is not the same attitude. The competition is very keen and it is hard to believe that the producers do not feel there is in progress a process of elimination. It is important to distinguish between the products controlled by the large companies and the products in which small producers figure so largely.

Pipe mills are running along at operating rates of 50 to 70 per cent, mills having large line pipe orders showing the higher rates. More line pipe business has been placed in the past few weeks than has been reported in detail in the trade.

Pipe prices are perfectly stable and are expected to be held without any difficulty.

First quarter Connellsville furnace coke contracts have been made at $2.90 to $3, confirming recent expectations that the operators would reduce wages to the old scale, paid up to November of last year, making a $5 basic day rate scale instead of the $6 scale lately paid.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Imports of crude and refined oils at the principal United States ports for the week ended December 17 totaled 1,102,000 bbls., a daily average of 157,429 bbls., compared with 1,252,000 bbls., a daily average of 178,857 bbls. for the week ended December 10 and a daily average of 196,071 bbls. for the four weeks ended December 17.

	Dec. 17
At Atlantic Coast ports:	
Baltimore	230,000
New York	557,000
Philadelphia	150,000
Others	79,000
Total	1,016,000
Daily average	145,143
At Gulf Coast ports:	
New Orleans and Baton Rouge	60,000
Port Arthur and Sabine district	26,000
Total	86,000
Daily average	12,286
At all United States ports:	
Total	1,102,000
Daily average	157,429
Daily average four weeks	196,071

Receipts of California crude and refined oil at Atlantic and Gulf Coast ports for the week ended December 17 totaled 336,000 bbls., a daily average of 48,000 bbls., against 958,000 bbls., a daily average of 136,857 bbls. for the week ended December 10 and a daily average of 68,000 bbls. for the four weeks ended December 17.

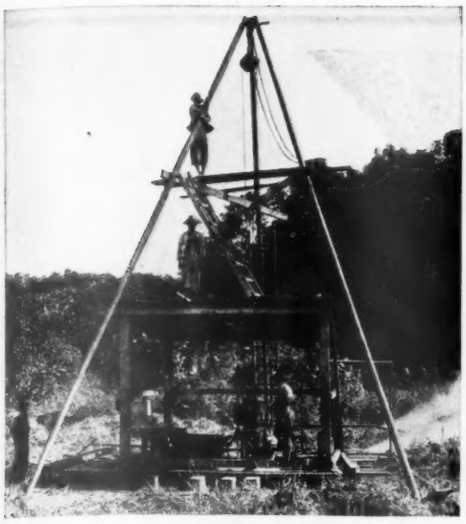
	Dec. 17
At Atlantic Coast ports:	
Baltimore	110,000
New York	169,000
Philadelphia	57,000
Total	336,000
Daily average	48,000
Daily average four weeks	68,000
Distribution of total California receipts is as follows:	
Crude	110,000
Gasoline	95,000
Gas oil	74,000
Lubricating oil	57,000
Total	336,000

BUY BIG SHANTY LEASE

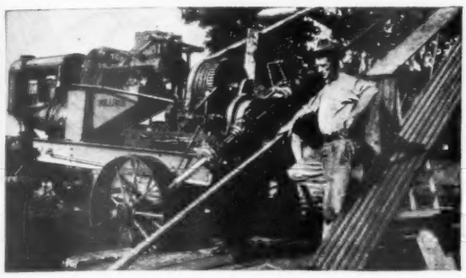
BRADFORD, Pa., Dec. 24.—Purchase of a valuable oil property and formation of a new oil company in this city were announced yesterday when James R. Evans, A. J. Douglas, Bernard C. Shea and E. J. Conwell bought from Mrs. Ruth Kelly Salisbury a 60-acre lease with 16-bbl. production daily at Big Shanty. The owners plan to develop all undrilled locations as soon as possible. The new company was named the Ruth Oil company in honor of a baby born Saturday night to Mr. and Mrs. Bernard Shea.

REPORTING TANK CARS

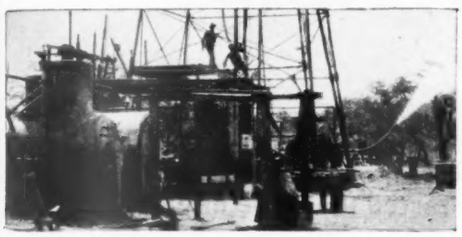
The State of Nebraska has just passed a law making it mandatory upon the railroads to report to the Department of Agriculture all tank cars of petroleum products unloaded at the various stations. These will be checked against the tax reports. Along with the enactment of this law it was further decided that cleaners solvent and other petroleum naphthas are subject to the 2-cent tax. An appeal for a rehearing in the Supreme Court, brought by the dry cleaners was denied.



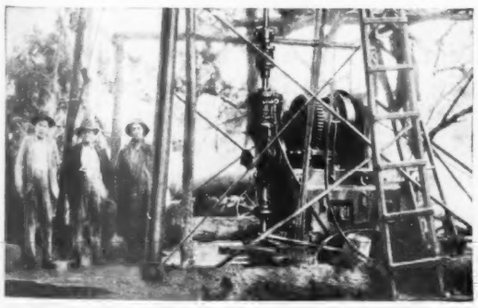
Sullivan Diamond Drill in a Borneo jungle, at work for the Anglo-Saxon Petroleum Co.



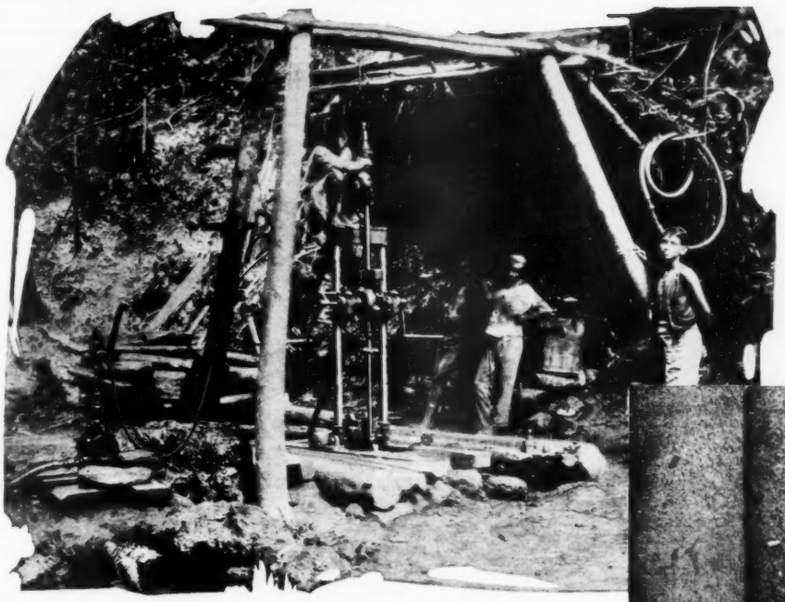
Sullivan Portable Diamond Drill boring a hole at 30 degrees, near Tampico, Mexico.



Sullivan Diamond Drill at Maracaibo, Venezuela.



Sullivan Diamond Drill in Portuguese East Africa, boring for oil.



Sullivan Diamond Drill owned by the Whitehall Petroleum Company, prospecting for oil at Assam, India.

Diamond Drilling the World for Oil

In almost every oil field of the world, study is being made to put "oil finding" on a scientific basis. In the face of a 400 per cent increase in well drilling costs since 1913, wildcatting has been outlawed by many big companies, who are securing the economies of diamond drilling.

Sullivan Diamond Drills have been used for deep tests as well as for structure drilling, in Santo Domingo, Venezuela, Peru, Colombia, Ecuador, Mexico, Algeria, India, Borneo, Canada, Portuguese East Africa, Roumania, Russia, Persia, and all oil fields of the United States.

At the cost of a single wildcat well, the structure of one or two whole townships can be tested with diamond drills. Then geologists can readily trace the anticline and locate the oil.

Sullivan Diamond Drills are available in a large variety of models. The portable machines effect economies by rapid drilling, and rapid moving. In one year 9 Sullivan Portable Diamond Drills bored 221,000 feet for one large oil company. One of the drills bored 5554 feet in one month, and moved 11 times. The big drills have taken core from depths of 6000 feet and greater.

The diamond drill requires fewer feet of casing than other rigs for a given depth; and for a deep hole the amount of steel is several tons less. This means an important saving in transportation charges, whether ocean, rail, ox-cart or camel back.

Sullivan Machinery Company

88 East Adams Street, Chicago, U. S. A.

Dallas	Garber	San Francisco	Paris	Turin	Mexico
Tulsa	Oklahoma	London	Tokyo	Calcutta	Shanghai

SULLIVAN

Diamond Drilling Is More Economical

Use this Coupon

Fill out the coupon for the 80-page handbook "Diamond Drilling for Oil."

Send me free booklet "Diamond Drilling for Oil."

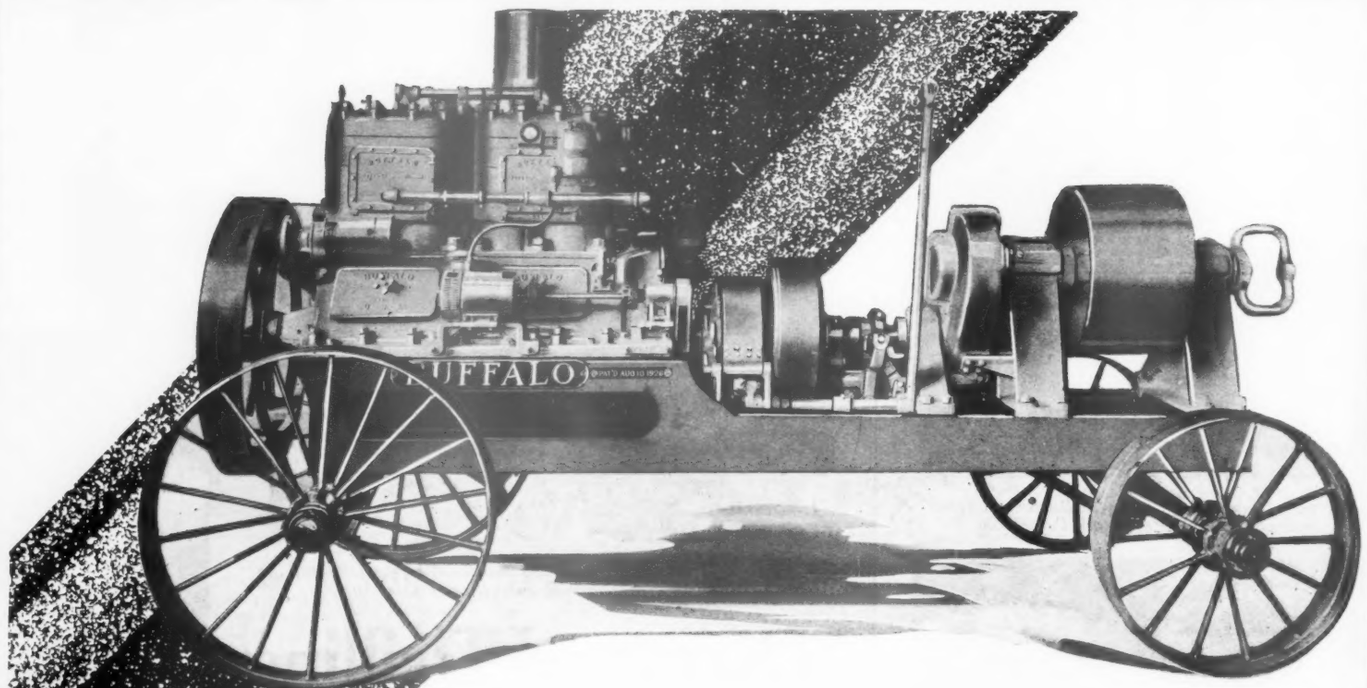
Name .....

Street Address .....

City ..... County ..... State .....

Occupation .....

Sullivan Machinery Company, 88 E. Adams Street, Chicago, U. S. A.



The Buffalo Drilling Unit for Steady Service and Economy-

You can save $40.00 to $100.00 per well in moving cost with the Buffalo Drilling Unit. It requires no special setting form, old rig timbers can be used. A well can be rigged up and spudding started the same day.

The Buffalo Drilling Unit operates on gasolene, natural gas or a combination of the two. It does not require the services of a licensed engineer. Water consumption is small. It is economical in fuel, oil, repairs.

Years of successful operation in the Pennsylvania, Kansas and Texas fields have proved that the Buffalo Drilling Unit will do all of the work a steam outfit will do. It is equal to steam in dropping tools or pulling a bailer. It will drill and spud just as fast as any outfit operating on any other power. The Buffalo Drilling Unit has drilled wells to a depth of 4,878 feet, and handled a string of pipe weighing 45 tons.

The Buffalo Drilling Unit is built in two sizes. Write today for booklet which tells the whole story.

BUFFALO GASOLENE MOTOR CO.

1282-1292 Niagara St. **Buffalo, N. Y.**

R. R. Reck
Bradford, Penna.
Parkersburg Rig & Reel Co.
Parkersburg, W. Va.
The Prichard Supply Co.,
Mannington, W. Va.
Waynesburg, Penna.

Buffalo

R. H. Shields,
Western Distributor
El Dorado, Kansas
Midland, Texas
McCamey, Texas
Abilene, Texas
Louden Tool Co.
Kittanning, Pa.

LOUISIANA-ARKANSAS

(Continued from Page 64)

pletion at 3,763 feet, set 2½-inch tubing with packer and is swabbing at 3,939 feet. Haynes Brothers' No. 1 Spell, Section 15-21-15, tested salt water at 3,911 feet and is waiting orders.

Magnolia Petroleum Co. has made location for No. 21 Dillon in Section 23-21-15; No. 8-A Hampton, Section 15-21-15, is drilling lime at 3,575 feet; No. 22 Robertshaw, Section 23-21-15, cemented a cavity at 3,304 feet. Ohio Oil Co.'s No. 25 E. K. Smith in Section 12-21-15, is in hard lime at 5,585 feet. Palmer Corp.'s No. 1 Sellingson, Section 17-21-15, is trying to set 4½-inch casing at 4,395 feet.

Pittsburgh Oil & Development Co. abandoned No. 1 Herndon in Section 15-21-15, November 3, on account of salt water at 3,948 feet but has gone back to the well and is rigging up to go deeper. Superior Oil Co. began drilling No. 8 Youree, Section 26-20-15, December 7, set 10-inch at 60 feet, 6-inch at 2,254 feet and is waiting on standard rig at 2,318 feet.

The Texas Company is setting 4½-inch casing at 3,852 feet in No. 50 Caddo Mineral Lands in Section 23-21-15, to cut off salt water from a leaky 6¼-inch casing; No. 51, same lease and section, is resetting liner at 3,942 feet. No. 8 A. Herndon, Section 14-21-15, is drilling at 2,933 feet and No. 9, same lease and section, is drilling at 1,875 feet after setting 15½-inch surface string at 202 feet. No. 10 J. K. Herold, Section 14-21-15, is setting 6-inch casing at 3,925 feet and No. 10 Mabry, in Section 15-21-15, is being rigged up to blow with air, total depth 3,930 feet. No. 19 D. H. Raines, Section 15-21-15, made a salt water test at 4,036 feet and is drilling at 4,107 feet.

Greenwood—Ferguson and others began drilling No. 2 Abney in Section 7-17-16, December 15 and have set 10-inch surface string at 100 feet and 8-inch at 1,232 feet. Greenwood Production Co. tested dry at 909 feet on No. 1 Alexander, Section 27-18-16, and are arranging to go deeper. Magnolia Petroleum Co. is coring lime at 2,580 feet in No. 1 John Furrh, Section 32-18-16. Waterman Brick & Tile Co.'s No. 1 Waterman Lumber Co. in Section 18-17-16, tested salt water at 940 feet in the shallow sand and is drilling at 2,100 feet.

Mooringsport, Oil City and Vivian—Been Oil Co. began drilling No. 1 Muslow, Section 29-20-15, December 14, set 110 feet of 10-inch surface casing and is drilling at 890 feet. W. D. Chew is waiting on standard rig to pump No. 7 fee, Section 33-21-16, total depth 1,868 feet. Standard Oil Co.'s No. 16 J. J. Hart in Section 34-21-16, is flowing by heads with an estimated 125,000 feet of gas with the oil from 24 feet of sand, 1,815-39 feet, but is not listed as a completion as tubing will probably be run during the week. The same company has derrick up for No. 191 Stiles, 165 feet north and 694 feet west SE cor. SW, Section 27-21-16.

DeSoto Parish

American Controlled Oil Co.'s No. 2 Lanier, Section 5-11-11, is drilling at 2,672 feet.

Monroe District

Morehouse Parish—Consolidated Carbon Co. has cemented 8-inch casing at 785 feet in No. 1 Perry (second hole) in Section 14-21-4, and is drilling below 1,065 feet. C. E. Jordan began drilling No. 1 Southern Carbon Co. in Section 14-20-4, December 15, and has 15½-inch surface string set at 94 feet. The Texas Company has rig up to drill No. 1 Myers in Section 15-22-7.

Ouachita Parish—J. M. Huber has made location for No. 4 Edwards, 2,582 feet east and 656 feet north SW cor., Section 1-18-4e. Imperial Oil & Gas Products Co.'s No. 3 Stubbs, Section 13-19-3e, has cemented 6-inch casing at 2,124 feet. Ouachita Natural Gas Co. is arranging to test No. 2-A D'Arbonne in Section 34-19-3e, at 2,212 feet; No. 7 Smith, Section 30-20-4, is drilling at 2,093 feet. Palmer Corp.'s No. 3 West Virginia Timber Co., Section 5-18-4, set 164 feet of 12-inch surface casing and has cemented 8-inch at 857 feet. United Carbon Co. cemented 8-inch in No. 2 Nelson fee, Section 6-19-5, at 832 feet and is drilling at 1,438 feet. West Virginia Oil & Gas Co. cemented 6-inch casing at 2,138 feet in No. 5 fee, Section 5-18-4.

Union Parish—Barbour Oil Co. is shut down in 8 feet of lime rock from 2,072-80 feet after fishing out a lost drill stem and cleaning out C. E. Cammatte and others' old No. 1 Tugwell in Section 21-22-1e. Carter & Goodwin's No. 1 Security in Section 7-23-1e, is standing full of salt water, total depth 2,254 feet. Last week it swabbed salt water with a small show of oil. Natural Gas Products Co. has derrick up for No. 1 Waldrop, 1,960 feet north and 2,630 feet west SE cor., Section 7-21-3e.

Richland Parish

Gulf Refining Co. has made location for No. 3 Rhymes, 1,270 feet north and 1,370 feet east SW cor., Section 28-17-6, tested dry at 2,451 feet in No. 2 Wayne Lumber Co. in Section 23-16-5, and is waiting orders at 2,453 feet. They have rig up for No. 1 Ches Weymond, 660 feet east and 3,910 feet north SW cor., Section 20-18-6.

Moody & Seagraves are rigging up to drill No. 1 Hatch, Section 34-16-5; No. 2-B Hemler, Section 6-15-6, cemented 6-inch casing at 2,283 feet; No. 1-C Hemler, Section 29-16-6, began drilling December 15, set 15½-inch surface string at 146 feet and is drilling at 670 feet; No. 1 LaFleur, Section 18-16-6, has rig up ready to drill; No. 1 McDonald is a derrick 1,518 feet east and 1,634 feet north of the SW cor., Section 9-15-5; No. 1 Noble, Section 36-16-5, is drilling at 2,300 feet and No. 1 Osborn, Section 14-15-5, is running 6-inch to set at 2,292 feet.

Natural Gas & Fuel Corp. has rig up on No. 1 Sartor-Phillips, Section 9-16-16, and on No. 1-A Thompson in Section 21-16-6. Noe & Meredith have derrick up for No. 1 Boughton, Section 4-15-6. Oliver & Masters, who abandoned No. 1 Hatch, Section 2-15-5, in the NW cor. SE SW, Section 2-15-5, after two or three months' vain effort to kill a salt water flow with a small amount of gas, have moved west into the NE cor. SW SW of the same section and have rig up for No. 2 Hatch, 1,270 feet north and 1,170 feet west SE cor.

Ouachita Natural Gas Co. began drilling No. 1 Cummings, Section 24-17-5, December 16, and have set 190 feet of surface casing, 12-inch. Southern Carbon Co.'s No. 1 Sartor in Section 20-18-8, is drilling at 2,248 feet. Stovall Drilling Co. is down 2,168 feet with No. 1 Dunning in Section 26-16-6. United Carbon Co. has made location and has derrick up for No. 1 Mulhern, 660 feet north and 610 feet west of SE cor. SW, Section 20-16-6.

Red River Parish

J. H. Askew has put No. 2 Richardson, Section 25-13-11, on the pump, total depth 2,550 feet, but there has been no gauge; No. 3 Richardson in the same section has a fishing job at 1,750 feet.

Sabine Parish

Seip and others are drilling at 1,905 feet on No. 1 Moore, Section 33-10-12. Moffatt and others cleaned out No. 2 Moore, Section 5-9-12, completed at 3,254 feet, September 11, making an initial 1,600 bbls. and brought production up considerably from the few barrels to which it had fallen.

Webster Parish

Cotton Valley—Humble Oil & Refining Co. cemented 11¾-inch casing at 2,810 feet in No. 5 J. Babb, Section 14-21-10, and is drilling at 2,290 feet. No. 1 Gray, Section 26-21-10, is drilling lime at 2,961 feet. Magnolia Petroleum Co. is drilling lime at 3,644 feet in No. 1 G. W. Cole, Section 27-21-10, and is down 2,795 feet with No. 1 D. G. Cox, Section 22-21-10. No. 1 J. M. Mixon, Section 22-21-10, is drilling at 2,184 feet. Ohio Oil Co. has rig up to drill No. 38 Bodcaw, 710 feet east and 627 feet north, SW cor. SE, Section 15-21-10, and for No. 1 Crichton, 660 feet south and 330 feet west of NE cor. E half NE SE, Section 21-21-10.

ARKANSAS

Ouachita County

Smackover—Humble Oil & Refining Co. is reaming to bottom on No. 4 Murphy (second test), Section 3-16-15, total depth 2,603 feet. Phillips Petroleum Co. is cementing bottom to cut off salt water at 2,696 feet on No. 19 Joyce, Section 33-15-15, likewise an old well being deepened to the Blossom sand. Standard Oil Co. has gone back to No. 1-B Goodwin, Section 5-16-15, completed as a 600-bbl. producer at 2,001 feet, April 13, 1923, and is arranging to deepen to the Graves sand and, failing there, to the Blossom; No. 5 Umstead in Section 32-15-15, another old completion being deepened, developed 2,000,000 feet of gas with a little water in a hard sand at 2,669 feet and is waiting orders. Buffalo Oil Co. cemented 6-inch casing at 2,075 feet in No. 3 Culp, Section 22-15-19 (Stephens district).

Union County

Champagnolle—Garrett-Modisett Drilling Co.'s No. 1 Gregory in Section 10-17-14, is alternately pumping a small amount of oil and then pulling rods and running sand pump to keep the hole cleaned out, total depth 2,765 feet with the bottom 4 feet in sand yielding about 350 bbls. fluid, 12 per cent salt water. Eddie Jones' No. 2 Crain, Section 2-17-14, cemented 6⅝-inch casing at 3,010 feet; No. 3, same lease and section, is drilling at 2,370 feet; No. 4 began drilling December 16, set 10-inch casing at 162 feet and is drilling at 785 feet.

Ohio Oil Co.'s No. 3 Crain, Section 1-17-14, is waiting on standard rig to pump from 8 feet of sand, 2,988-96 feet, with the hole standing 1,800 feet in oil. No. 5 Crain, in the same section, bailed casing at 3,049 feet and is arranging to test 7 feet of sand, 3,049-56 feet; No. 6 is drilling at 2,557 feet and No. 7 at 2,130 feet. No. 1 R. H. F. Goode, Section 2-17-14, is drilling at 2,093 feet and No. 2 at 2,310 feet. No. 2 Rich Pumphrey, Section 2-17-14, is drilling at 2,611 feet and No. 3 at 2,155 feet. No. 1 W. Pumphrey, Section 1-17-14, bailed salt water at 3,017 feet and will be abandoned. Oilwell Corp., a recently organized concern, has made location for two wells in Sections 11 and 10-17-14, offsetting the Garrett-Modisett well on the Gregory lease. No. 1 J. Dumas is a derrick pattern on location 150 feet north and 150 feet east SW cor. NE NW SW, Section 11-17-14, and No. 1 Townsend is a derrick 200 feet north and 200 feet west of SE cor. NW NE, Section 10-17-14.

El Dorado—C. H. Allison's No. 10 Fitzgerald, Section 17-18-15, is shut down at 1,820 feet waiting for fuel. Grimes Brothers have cemented 6-inch casing at 2,207 feet in No. 9 Van Hook, Section 7-18-14 (East Field).

Smackover—Laurel Oil & Gas Co. is washing No. 1 Houston, Section 12-16-16, preparatory to going deeper, the well having been completed June 25, 1925, as a 100-bbl. producer at 2,623 feet. Lion Oil Refining Co. began drilling No. 1 Leverett, Section 11-16-16, December 19, and is milling 6-inch casing at 2,400 feet on No. 7-B Murphy in Section 8-16-15, after plugging back from 2,806 feet. Magnolia Petroleum Co. is running sand pump in No. 1 Wilson, Section 17-16-15, with the hole standing 1,40 feet in fluid from 5 feet of sand 2,480-85 feet. E. N. Wood's No. 2 Houston in Section 12-16-16, tested dry on drill stem test at 2,730-33 feet and is shut down at 2,743 feet waiting orders.

EAST TEXAS

Harrison County

Doney and others have derrick up for No. 2 Furrh, 200 feet north and 165 feet west SW cor., J. Short Survey, in the Joel Lipscomb Survey after testing dry in No. 1 at 1,006 feet. C. H. Lyons and others have cemented 6-inch casing at 995 feet in No. 1 Furrh, 1,124 feet south and 400 feet east NE cor. E. M. Jenkins Survey in the James Short Survey. They began drilling December 14 and set 10-inch surface casing at 100 feet. Magnolia Petroleum Co. has rig up for No. 1 A. G. Vincent, 3,886 feet north and 4,340 feet west SE cor. R. W. Bedford Survey. Mitchell and others' No. 1 Jones, Joel Lipscomb Survey, is shut down waiting orders after a dry test at 960 feet.

Simms Oil Co. has rig up for No. 1 J. A. Pollard, 300 feet north and 300 feet east of south and west lines of J. Short Survey. Thomason and others No. 2 Timmons on the Joel Lipscomb Survey, set 10-inch casing at 102 feet and 6-inch at 935 feet. Tylong Oil & Gas Co. began drilling No. 3 Vaughn on the W. R. Anderson Survey, December 15, and are drilling at 790 feet. A. L. Waller completed No. 2 J. M. Bryson on the W. R. Anderson Survey as a 5,000,000-foot gasser at 1,916 feet and has derrick up for No. 4 on the same lease.

Panola County

Bethany Oil & Gas Co. is rigging up to drill No. 4 Burns, standing as a location 3,700 feet east and 700 feet north SW cor. W. A. Birdsong Survey, since November 24. S. H. Gardner and others have made location for two wells on the Roquemore land in the B. C. Jordan Survey, No. 1 was a completion before it got on the books and No. 2 is rigging up, but check location on both is lacking. Magnolia Petroleum Co. is drilling lime at 2,442 feet in No. 1 Lila Fletcher, B. C. Jordan Survey and is drilling at 280 feet after setting 166 feet of 13⅜-inch casing on No. 1 Jernigan & Estes in the Benson Lovell Survey. The company's No. 2 Sol Oden in the C. F. Mitchell Survey, is drilling gumbo at 1,157 feet. No. 13 Carrie Steele in the same survey began drilling December 15 and has set 13⅜-inch surface casing at 135 feet and 8-inch at 975 feet; No. 1 J. M. Trosper, James Shadoin Survey, is fishing for bailer, total depth 2,416 feet and No. 3, same lease, is rigging up.

SOUTHWEST TEXAS

(Continued from Page 62)

No. A-4 Dennett, Section 39, Block 1, is drilling at 1,125 feet, using rock bit and making slow progress.

Adams Gas Field—Medina

Southern Gas Utilities-Witherspoon Oil Co.'s No. 3 Redus Survey 92, located 400 feet to north and west lines of survey and farm, is drilling at 500 feet; No. 5 Adams, located 1,400 feet north of No. 4, is location. Witherspoon Oil Co.'s No. 1 Tidal lease is location in western part of field; No. 6 Nixon, Survey 119, located 2,750 feet to north line, is setting casing at 878 feet. C. E. Lange & Jake Jarmon's No. 1 Adams, Survey 71, located 500 feet to north and west lines, is shut down at 60 feet.

Refugio Gas Field—Refugio

Coast Gas Co.'s No. 2 Shelly is drilling in gumbo at 2,415 feet. Houston Oil Co.'s No. 4 Rooke at 2,634 feet cored sand; No. 8 W. J. J. Heard is drilling at 3,216 feet in gumbo; No. 1 Smith Heard is rigging up to deepen; No. 11 W. J. Heard at 2,658 feet is waiting on cement; No. A-2 Rooke is drilling. Houston Gulf Gas Co.'s No. 1 Vance at 2,623 feet is in water sand; No. 5 Fanny Heard at 3,276 feet is in sand; No. 6 Fanny Heard is deepening from 2,405 feet; No. 3 Heard has set surface casing; No. 4 Heard is drilling at 2,510 feet; No. 1 Smith Heard is standing at 2,510 feet. George Williams, trustee, No. 1 Terrell, Martin Powers Survey, 6 miles southwest of Refugio, is standing at 1,868 feet.

White Point Gas Area—San Patricio

Houston Oil Co.'s No. 1 Humble is ready to drill in; No. 3 Humble has derrick up; No. 4 Humble is drilling at 2,306 feet; No. 5 Humble is location; No. 2 Ragsdale is in gumbo at 2,304 feet; No. 3 Ragsdale is location in J. N. Seguin Survey. Mission Drilling Co.'s No. 1 Morris is in gumbo at 1,280 feet; No. 1 Hunter is reaming at 400 feet to set 10-inch casing; No. 3 Cage is location. Saxet Oil Co.'s No. 2 White Point Development Co. is drilling at 1,975 feet with water sand at 1,898 feet; No. 8 Rachal is drilling at 2,534 feet; No. 9 Rachal is drilling; No. 10 Rachal is standing at 400 feet; No. 12 Rachal is ready to drill in at 2,312-16 feet; No. 1 Hunter is waiting on water.

EQUIPMENT AND SUPPLIES

DEARBORN COMPANY HAS PACIFIC COAST PLANT

The new warehouse, plant and offices of the Dearborn Chemical Co., in Los Angeles, Calif., are at 807-15 Mateo Street.

Ground space 100 by 140 feet was purchased and a building 57 by 115 feet

constructed in the summer of 1927. The building, of brick and concrete, contains nearly 13,000 feet of floor space. The remainder of the ground area is used for oil tank storage. Seven 10,000-gallon tanks are already installed.

The plant is equipped with several blending tanks, for the compounding of

oils for individual lubrication requirements, together with machinery and equipment necessary for the manufacture and storage of other products manufactured by the company, chief of which are Dearborn scientific water treating preparations and NO-OX-ID rust preventive.

This extension of manufacturing facilities relieves the congestion in the main plant in Chicago, and better serves the company's clientele on the Pacific Coast, and in the Hawaiian Islands.

The Pacific Coast business of the company is managed by Alex B. Burns.

EXPERIMENTING WITH DOUBLE-LENGTH PIPE

The Jordan Drilling Co., of Monroe, La., associated with other interests in building 43 miles of 6-inch gas line from the Monroe Field to Hodge, La., is experimenting with joints twice as long as the ordinary joint of pipe and is using electricity to weld them. The line, being built to provide fuel for the plant of the Advance Bag & Paper Co., under construction at Hodge, a small town on the Rock Island Railroad in Jackson Parish, is made up of 40-foot lengths of pipe made of a steel-and-copper alloy instead of the ordinary 20-foot joints of steel pipe. At each joint a collar slip joint 3½ inches long is welded on, making a reinforced weld, half as many welds being required with the longer joints as in using standard lengths of pipe.

TRADE LITERATURE RECEIVED

"Making Markets" is a 24-page magazine issued monthly by the Sheet Steel Trade Extension Committee, Pittsburgh, Pa., and devoted to sales information.

The American Blower Co., Detroit, Mich., is distributing a bulletin pointing out the problem presented by dust, ash and cinders, and describing the "Sirocco" Collector as a means of solving it.

A folder prepared by the Novo Engine Co. gives a description and pictures of its new Novo Roller engines, declared to be vibrationless and consuming only 5 1-5 quarts of gasoline a day.

Commemorative of its fiftieth anniversary, the Kennedy Valve Manufacturing Co., Elmira, N. Y., has published an attractive brochure, artistically illustrated, done in colors on heavy calendared paper. The text gives a history of the company and describes its manufacturing processes.

The "Yellow Strand," published monthly by Broderick & Bascom Rope Co., is devoted to articles on uses of B. & B. ropes.

A brochure issued by the Atlas Lumnite Cement Co., New York, tells how safe winter concrete can be obtained over night without expensive protective methods.

The Kewanee Boiler Co., Kewanee, Ill., has issued a new catalog, Kewanee Firebox Boilers.

The Foster Wheeler Corp., New York, is mailing bulletins on Wheeler Feed Water Heaters and the Foster Economizer.

The December number of "Sivyer Reports," sent out by the Sivyer Steel Casting Co., Milwaukee, Wis., announces the latest addition to the Sivyer library, the New Sivyer Pattern Book.

The leading article in the November-December issue of the "Industrial Fire Chief," published by the American-La France and Foamite Corp., Utica, N. Y., is on "What Fire Means to the Business Man."

The Hays Automatic CO_2 and Draft Recorder is described and illustrated in a new 16-page catalog issued by the Hays Corp., Michigan City, Ind. Nineteen years have been spent in developing the Hays Recorder, which, according to the manufacturers, combines simplicity, ruggedness and accessibility with attractive appearance.

"Fathers of Industry," a brief historical sketch of the Hazard companies and their founders, is issued by the Hazard Manufacturing Co., and the Hazard Wire Rope Co., Wilkes-Barre, Pa.

"Pipe Dreams," and "True Greatness," are among subjects treated in the latest issue of Herk U. Lee's Log Book, published by the Hercules Supply Co., Dallas, Tex.

The new Type XOB belt-driven compressor, designed especially for oil field work, is described in a bulletin from the printing plant of the Ingersoll-Rand Co., New York.

Two new drill bulletins are being sent out by the Sullivan Machinery Co., one on Sullivan auger rotators and the other on Sullivan "rotator" rock drills.

The Laclede-Christy Bulletin for December announces removal of the Laclede-Christy offices in St. Louis from 1673 Railway Exchange Building to 1711 Ambassador Building.

The Wheeler Condenser & Engineering Co., New York, has issued a bulletin on Hot Water Heating Systems.

"Incidents in the Life of the American Rolling Mill Co." is a booklet containing a series of institutional advertisements which depict the human side of an industry. It is being distributed by the American Rolling Mill Co., of Middleton, Ohio.

A bulletin issued by the Irving Iron Works Co., Long Island City, N. Y., describes Irving open steel flooring, used extensively in oil refineries for runways, walkways, stairs, etc.

Wilson-Snyder, of Pittsburgh, are sending out a four-page folder giving details of the construction of Wilson-Snyder long-stroke slush pumps. The company has been building heavy-duty pumps for more than 50 years.

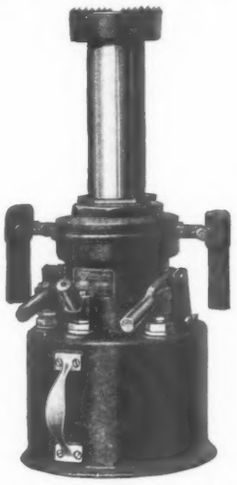
In a 12-page bulletin C. F. Braun & Co., with offices in Alhambra, Calif.; Tulsa, Okla.; Dallas, Tex., and New York, announce complete manufactured oil-refining units co-ordinating forced circulation stills (Stratford patents), fractionating equipment, heat-exchange apparatus and highly specialized centrifugal pumping equipment. The units are erected for capacities ranging from 500 to 10,000 bbls. a day per unit.

"Instructions for Adding Nickel to Cast Iron," "Alloy Cast Iron Meets High Duty Requirements" and "Notes on Machining Alloy Steel" are recent publications of the International Nickel Co., New York.

In the December number of "The Columbian Crew" the Columbian Rope Co. uses its pretty tricolored first page for a holiday greeting, wishing its friends a merry Christmas and a happy New Year.

75-TON JACK WEIGHS 200 POUNDS

The Blackhawk Manufacturing Co., of Milwaukee, Wis., has added to its line of hydraulic oil power jacks a 75-ton model weighing only 200 pounds. Special handles enables two men to carry it with little effort. Its collapsed height is 18



inches and it has a 10-inch lift, giving it a total height of 28 inches. This jack is equipped with two pumps, a speed pump to raise the plunger to the point of contact quickly and a power pump to raise the load. A check-valve unit, described as the heart of the jack, contains both ball checks.

SOUTHWESTERN OFFICES

The Griscom-Russell Co. has established its southwestern district offices at Dallas, Tex., 305 Magnolia Building, with K. B. Ris in charge.

SKINNER BAND CLAMP FOR STOPPING PINHOLE LEAKS IN WELDED LINES

Clamp applied.

Clamp showing how band is attached.

This new band clamp, manufacturedd by the M. B. Skinner Co., 358 Washington Boulevard, Chicago, is designed primarily for pinholes in welded lines. However, it is said to be equally effective for pinholes in center rings on couplings or in the pipe itself.

The clamp consists of a buckle, an inset slotted bolt with lock nut, and a brass band. One end of this brass band is hooked into the buckle, then the band is brought completely around the pipe and its other end inserted in the slotted bolt, where, when the wrench is applied, it is wound around the bolt. Under the resulting tension, the band shapes itself to the contour of the weld or center ring, while the pull of the bolt exerts enormous pressure over the full area of the band and stops the leak.

Any suitable rubber will do for a gasket. The Skinner band clamp, according to the manufacturers, is handy, quick to apply, and solves one of the most annoying problems in the oil business, leaky welds and other pinholes.

OCS

OIL COUNTRY SPECIALTIES

CHAIN DRIVEN SAND REELS
For Cable Tool Drilling

COUNTERSHAFT CLUTCHES
Gearless Reversible

EQUALIZERS
Bandwheel Counterbalances

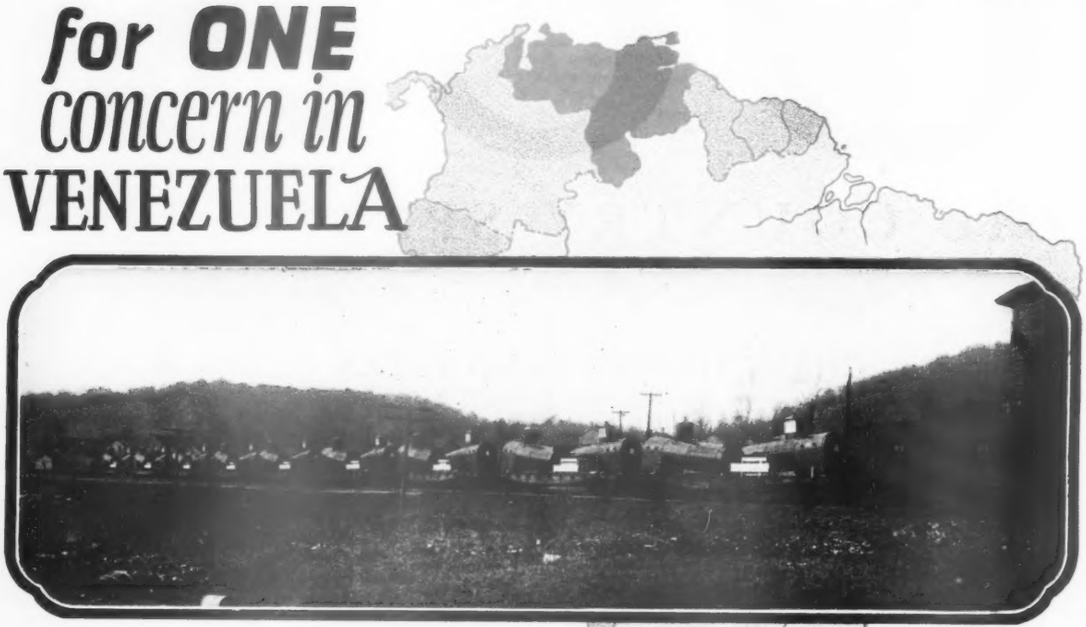
REDUCTION UNITS
For Electric Motors

These successful Oil Country Specialties are built by successful Oil Country Specialists for Drilling and Pumping Deep Wells with Standard Rigs.

THE OIL COUNTRY SPECIALTIES MFG. CO.
COFFEYVILLE, KANSAS

112 ACME BOILERS

for ONE concern in VENEZUELA



Operators in South America, as elsewhere, have learned that Acme Oil Well Boilers are dependable under the most severe conditions. The illustration shows one trainload of 18 Acme Boilers constituting part of an order for 112 of these boilers for a single oil company in Venezuela.

Acme Boilers are manufactured of very best materials, with a safety margin in excess of the A.S.M.E. Code. They are the best steaming boilers on the market anywhere. All fittings are of the highest grade. Workmanship is guaranteed.

Furnished in various sizes and pressures, from 25 H.P. to 100 H.P.

"If CONTINENTAL Sells It, There Is No Better"

THE CONTINENTAL SUPPLY COMPANY
General Offices: St. Louis, Mo.
Export Office: 74-76 Trinity Court, New York
London Office: 316-317 Dashwood House, Old Broad St.
THE CONTINENTAL SUPPLY COMPANY, Limited
69 Thomas Block, Calgary, Alberta, Canada

CONTINENTAL

PETROLEUM EXPORTS SHOW BIG GAIN

(Continued from Page 158)

Country of Destination	1926	1927
Denmark	27,091	15,786
France	363,466	277,712
Germany	281,334	277,458
Italy	178,602	158,830
Netherlands	36,852	65,089
Norway	8,778	6,991
Spain	37,914	35,616
Sweden	23,978	17,041
United Kingdom	459,090	505,045
Canada	85,285	89,909
Mexico	34,991	16,566
Cuba	20,125	21,696
Argentina	76,783	63,992
Brazil	47,159	45,485
Chile	14,848	11,294
Other South America	25,607	26,915
British India	82,432	47,503
China, Hong Kong and Kwantung	32,147	15,836
Netherland East Indies	13,599	4,591
Japan	42,678	42,289
Philippine Islands	7,706	1,521
Australia	127,006	156,641
New Zealand	24,122	28,154
British Africa	68,615	62,610
Egypt	39,898	36,360
Portuguese Africa	27,309	19,222
Other countries	109,639	93,506
Total cylinder lubricating oil	2,394,790	2,221,724
Grand total lubricating oil exported	6,860,720	7,226,048

RUSSIANS LIKELY TO EXCEED RECORD

(Continued from Page 134)

oil fields of Dosser and Makat. By an investment of $12,000,000 to $15,000,000 this district could give an annual output of 500,000 tons of oil of a very good quality. This oil could be easily be shipped on the Caspian Sea and exported over the Black Sea.

2. The Island Chelekena in the Caspian Sea, with a possible annual output of 160,000 tons.

Both these districts are already pretty well explored. Less known are the following districts:

3. The Shirak district in the Caucasus.

4. The southeastern shore of the Caspian Sea Nefte-Dage, Nai-Mar.

5. Kamtchatka—the least explored oil deposits of the Soviet Union.

Pipe Line System

The pipe line system connecting the Caspian and Black Seas, which is to be built, will provide the possibility to connect the new districts on the Caspian Sea with the world market and to raise quickly the total production of the Soviet Union.

Sale in the Home Market and Export

The sale of oil products in the domestic market, as in the world market, is growing rapidly during the last years:

Year—	Domestic Sale	Export
1913	6,060,500	914,032
1922-23	3,597,500	309,716
1923-24	3,456,000	723,176
1924-25	4,569,000	1,337,154
1925-26	5,402,222	1,473,687
1926-27 first half year	2,778,000	*887,862

*In the last (third) quarter the export reached 525,000 tons.

The development of the home sale corresponds to the pace of the general industrial development. As regards export, it has more than exceeded its prewar level—in 1926-27 a total export of over 200,000,000 tons is expected, more than the amount exported in 1913. This shows how quickly the part played by the Soviet Union in the world oil market is increasing in importance. Thus the apprehensions of the competitors of the Soviet oil are comprehensible.

Exports Increase

The following table shows the part of the various countries in the export of Russian oil during the past two years:

Country—	1925-26	1926-27
Great Britain and her colonies	180,024	272,245
Italy	173,540	225,262
France	102,599	136,672
Germany, Austria and Czechoslovakia	119,324	120,302
Belgium	14,947	34,834
Scandinavia, Finn, Baltic States	16,473	25,270
Spain, Portugal	.....	24,002
Turkey, Greece, Bulgaria	10,926	32,264

The increase of the oil export to the various countries as against the first half year 1925-26 as well as the part of their consumption covered by import from the Soviet Union are to be seen from the following table:

Country—	First Half Year 1926-27—Increase as against the first half year in Per cent	First Half Year 1926-27—Part of consumption covered by import from Russia in Per cent
Italy	29.8	38
Great Britain	39.4	5
France	33.2	12
Germany and Czechoslovakia	0.8	10
Belgium, Holland	133.1	9
Turkey	107.8	30
Egypt	112.9	25

The aggregate export of oil products in the first half year, 1926-27, reached 887,862 tons and was made up on the following way; illuminating oil, 219,106 tons; benzin, 241,475 tons; lubricating oil, 81,337 tons; solar oil, 6,725 tons; fuel oil, 234,163 tons; gasoline, 59,538 tons; crude oil, 45,518 tons.

VENEZUELA TO SHOW INCREASING ACTIVITY

(Continued from Page 129)

other companies are expected to follow the same policy.

In La Punta Benites Field there has been less activity during the three months ended with September.

La Rosa Field

In La Rosa Field 18 wells were brought in during the three months of July, August and September, one of which was 1,600 meters out in Lake Maracaibo, with an average daily production of 5,000 bbls.

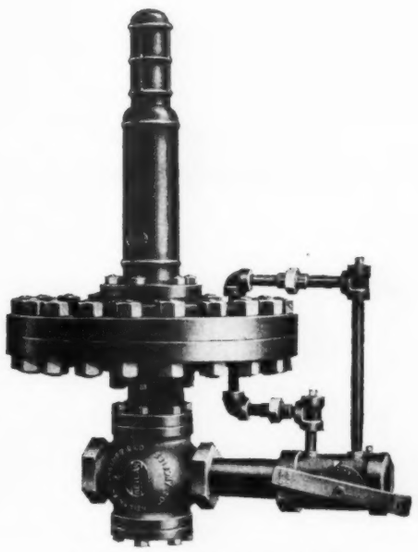
The exports from this field were 1,460,748 bbls. in July, 1,537,926 bbls. in August and 1,315,536 bbls. in September. In this field practically all of the boundary line wells have been drilled and less attention is being given to drilling there than in the Lagunillas Field where many offset wells are yet to be put in.

In August the English company drilling in the El Mene Field officially abandoned two wildcats to the south of the proven area. During July this company brought in one well with a daily production of 15 bbls. The same company brought in four other small wells that are now being pumped about 15 bbls. a day. They brought in one well giving 300 bbls. a day although its initial pro-

THE BALAKHANI FIELD, RUSSIA

NEILAN

AIR-GAS LIFT FLOW CONTROLLER



NEILAN AIR-GAS LIFT FLOW CONTROLLER NO. 80

Positively and automatically controls the volume of air or gas delivered to each well.

Eliminates difficulties of hand regulation and the detrimental effect of an irregular supply of air or gas to wells.

Enables the operator to positively maintain a proper gas-oil ratio for each well.

Permits manifolding all compressors into a single large header.

Built for working pressures up to 500 and 1000 lbs.

Entire unit extremely heavy, rugged and sturdy to withstand severest service.

Controller absolutely accurate and reliable. Adjustment for any desired volume extremely easy,—simply turn the handle of the butterfly valve.

Volume control accomplished by differential diaphragm connected to balanced valves and adjustable to maintain a constant differential across an orifice, which is adjustable for varying flow of air or gas to meet the requirements of any well.

Complete details on request.

NEILAN, SCHUMACHER & CO.
641-651 Santa Fe Ave., Los Angeles, Calif.

Representatives:
Maintenance Engineering Corp.
2000 Harrington Street,
Houston, Texas

C. F. Camp Company
221 East Archer St.,
Tulsa, Okla.

"You Can Be Sure of Neilan Products"

1

Ball bearings eliminate shaft wear and are not affected by ordinary belt tension.

2

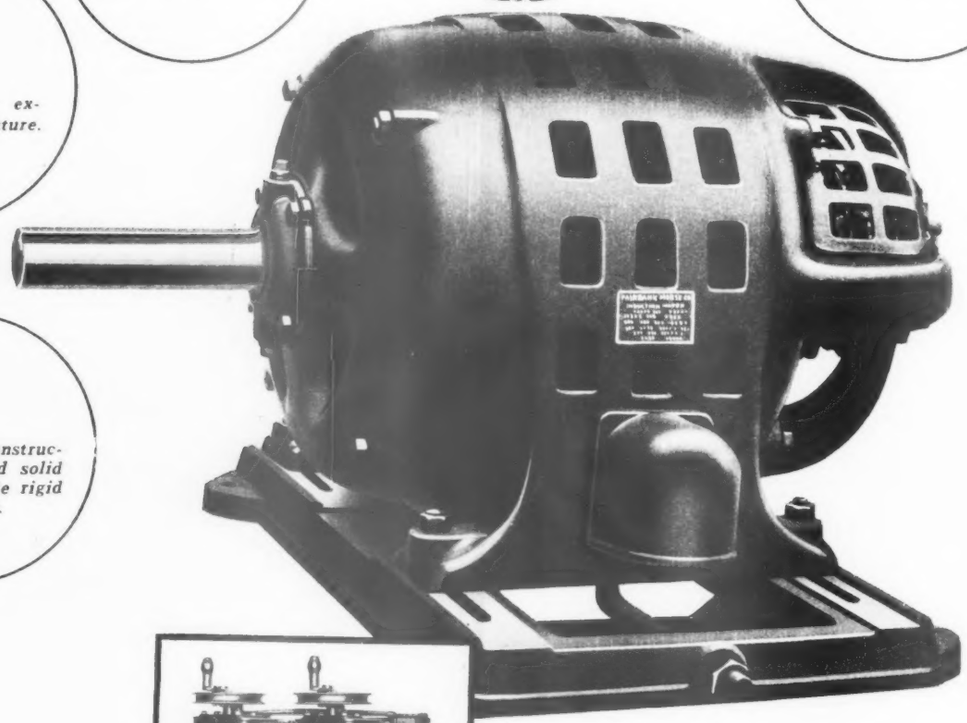
Ball bearings maintain alignment of rotor and uniformly small air gap necessary for high efficiency.

3

Ball bearings require greasing only once or twice a year—practically self-lubricating.

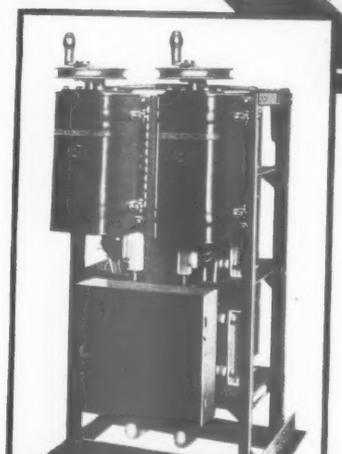
4

Bearing housings exclude dirt and moisture.



5

Sturdy frame construction with broad solid feet to facilitate rigid mounting.



6

Extra heavy shaft to withstand undue belt tension.

7

Moisture-proof insulation.

8

High starting torque with low current consumption.

9

Fourteen speed variations between 25 per cent and full speed.

10

Reversible interlocking controller with overload protective relays, providing complete control from the "Headache Post."

Built expressly for pumping and pulling

This Fairbanks-Morse Ball Bearing Motor unquestionably represents the furthest advance in a two-speed motor for oil field service.

The ball bearing construction, pioneered and consistently improved and perfected by Fairbanks-Morse, deals a death blow at the cause of most motor failures. Shaft wear is totally eliminated by this construction and a precise air gap is constantly maintained. Such bearings are practically self-lubricating. They require greasing only once a year.

In this two-speed motor a wide variation of speed and horsepower is provided—300 to 1200 r.p.m. in the 15 and 35 hp. rating; 225 to 900 r.p.m. in the 20 and 50 hp. rating. Maximum reliability is assured by the use of a wound rotor with six slip rings and four brushes on each ring. Two sets of connections with the stator in conjunction with a pole changing switch, give the two combinations of poles: One for low speeds and low power; the other for high speed and power.

The controller is particularly simple and easily operated. It provides seven points of speed control both forward and reverse with each set of connections.

Ask for complete description of this advanced motor.

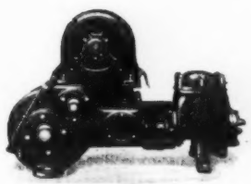
FAIRBANKS, MORSE & CO., Chicago

28 branches throughout the United States at your service

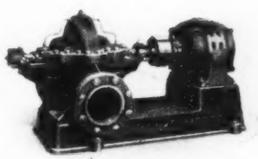
FAIRBANKS-MORSE

Pioneer Manufacturers of ball bearing motors

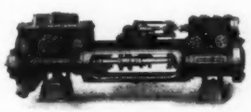
PUMPS · DIESEL ENGINES · SCALES



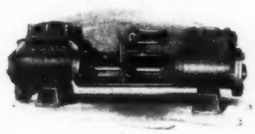
Self-Oiling Power Pump with F-M Ball Bearing Motor—also furnished for belt or engine drive.



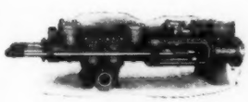
Typical of the wide range of F-M "Unit-Built" motor-pump combinations. Ball bearings throughout.



"Mid-Continent" Duplex Piston Steam Pump for pressures up to 800 lbs.

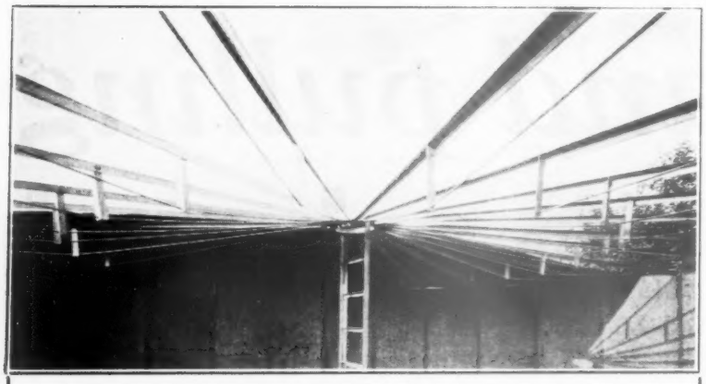


Duplex Piston Pattern Steam Pump for general service.



"Coalinga" Duplex Plunger Steam Pump for field service — outside-end-packed for pressures up to 750 lbs.

KEYSTONE COPPER STEEL



View showing construction of 5,000-bbl. Maloney Tank—showing cantilever construction of deck trusses in 1,500-bbl. to 10,000-bbl. sizes.

MALONEY EXPORT SERVICE

Maloney Tanks Packed for Export Shipment.

The MALONEY export department, with forwarding representatives at four U. S. ports, and foreign agents in all important oil countries, assures prompt and proper handling of orders for export shipment.

MALONEYS for export are packed in steel-bound crates, properly stenciled, and conforming strictly to regulations of the country to which shipped.

The exceptional durability, tightness, strength and convenience of MALONEY Bolted Steel Tanks, together with the painstaking service rendered by our export department, account for a host of satisfied users in every oil district in the world.

"Alone in Quality"

MALONEY TANK MFG. COMPANY
Tulsa, Okla., U. S. A.

Distributors at All Principal Petroleum Points

Sizes: 12 to 10,000 Barrels.

Packed in Steel-Bound Crates for Export

Howell Aluminum "3-in-1" Vacuum Pressure Valve and Thief-Hatch—The BEST and LATEST Deck Equipment—POSITIVE Safety.

MADE OF KEYSTONE COPPER STEEL

MADE OF KEYSTONE COPPER STEEL

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MALONEY
ALONE

duction was 600 bbls. Another well is production 700 bbls. a day of 42 gravity oil. This company abandoned in July four wells, two being dry and the other bringing in salt water.

An American company drilling in the Urumaco Field has had two accidents, one a fire, which made it necessary to junk the well and only recently the same company encountered in the second hole a gas sand some hundreds of feet above where they expected to encouunter the oil sand. Some mechanical damage was done.

In the Concepcion Field operation has been closed down for several months because of the expense of producing the oil as most of the wells were on pump, according to one report, and because of a lack of transportation, according to another. It is reported that the Falcon Oil Corp. has acquired a 5 per cent royalty interest on Lago Marine Zone property approximating 25,000 acres, effective July 1.

This entire report which has just been received in this couuntry indicates a general activity not only for the export of more oil from Venezuela, but also added production in practically all the oil fields of that country. The general belief prevails there that this activity will continue to increase during the winter months.

KENTUCKY-TENNESSEE

(Continued from Page 78)

field, is making a good showing. No. 2 on this farm came in at 100 bbls., as did No. 1, making it one of the good producing leases of the Sunnydale area. Earl Patton is drilling a second test on the Mark Renfrow 149 acres. Daly and Lowman are drilling their No. 1 on the Baker Brothers farm to the lower sand and at last reports it was down 725 feet, the well being dry in the upper pay. White Plains Oil & Gas Co. is nearing pay sand at No. 1 on the John Dodson 125 acres.

In Daviess County, Doctor Emmett and others is drilling a second test on the T. J. Higdon 117 acres. No. 1, drilled on this farm early in the year, was a dry hole. Lee Birk and others are drilling an offset to No. 1 on the Mattingly heirs farm owned by John Roby, which is separate and apart from the John Roby 90 acres, which is operated by the Leeper Oil Co. Thompson & Tremore are getting near pay sand at No. 1 J. A. Coomes farm, in the Roby Pool.

Field Pickups

Development of the west central section of the Ohio County oil field is being pushed more lively by oil operators, particularly since the coming in of the well on the Gilbert Jolly farm, 2 miles west of Buford and between Ambrose Pool and the Stelle chicken farm at Buford. New wells are being planned throughout that territory, and as soon as the pipe line gets into the territory it will not be surprising to find as many producers hitched on as now are furnishing production out of the Ambrose Pool. One company, the Barnard-Rial Oil Co., with 2,800 acres in one block somewhat south of the Jolly well, 144 acres northwest of the well and 1,800 acres southwest and 800 acres further south toward the town of Beda, later in the week let a drilling contract to the Robert Maybier concerns of Detroit, Mich., for a well in each of these blocks to test the territory. Heavy drilling tools will be used for these tests so that a depth of 2,500 feet or more can be made to test out any lower producing formations, as there is a possibility of the great McCloskey sand being found which was such a heavy producer in the Lawrence County Field of Illinois. This same formation was found in a test drilled some years ago in Union County, Kentucky, which had a light showing of oil.

The Cumberland Petroleum Co., one of the late concerns to go into Ohio County, will with Kelly, Yewell and others do a lot of drilling on the Bob Hamilton farm, southeast of the Ambrose Pool, near the Mt. Moriah Church, which contains 350 acres, a long strip running almost due north and south. Two good wells have already been drilled on this lease, and the Cumberland Petroleum Co. has four more to drill, the contract being for six wells. A large central power plant has been ordered for the big lease and the owners contemplate the drilling of at least 40 wells, as the entire tract looks good with wells on all sides.

A second well is being started on the Gilbert Jolly farm, a couple of miles west of the Hartford Road, near Buford. On the adjoining lease, known as the Austin Tucker farm, Livermore parties are starting a well.

Samuel J. Patrick, well-known Lexington oil operator, is planning to drill a wildcat about 4 miles west of Owensboro, in Daviess County, the location to be on the Claude Alvey farm, to test out a large block of acreage that he holds there. Mr. Patrick is nearing pay sand on the Burns farm, north of Brown's Valley, same county, and has been delayed by a fishing job.

Frank Russell failed to find a pay in the Jett sand at his test on the J. C. Westerfield farm and is going down to the Barlow sand.

Rigs are under way for two wells by the Cumberland Petroleum Co. and others in the Hayden farm area. One is to be on the Dell Salom farm and the other on the R. H. Neeley farm.

Everett Evans of Paintsville has purchased a 65-acre lease on the Herbert Nisely farm from Dr. L. C. Young for a consideration of $1,000.

Court Decision

James C. Ellis, operator of the Rousseau Weller oil lease, on which are now 26 producing oil wells, and Weller were successful in establishing in circuit court at Hartford, before Circuit Judge Wilson, their title to the land on which the wells are drilled. The title was being attacked by Octavia Shaver and several others who claimed title to the greater portion of the land through descent. A crudely drawn deed, filed with the pleadings, was the crux of the court decision, the Shaver side of the Weller family claiming the deed conveyed but a small undivided interest, as the widow of the original owner of the land had not power to convey the entire interest. J. R. Weller defended, as most of the plaintiffs had joined in the deed. The court held the deed was a good conveyance of the land, but gave the plaintiffs until the first rule day in January to plead further. This lease is in the Ambrose Pool of Ohio County.

CRUDE OIL IMPORTED FROM ISLE OF TRINIDAD

(Continued from Page 160)

165, or an increase of $1,494,106 over 1925 and $2,422,517 over 1924 figures. The steady rise of petroleum from an export item valued at $120 in 1908 to the proportions attained by the industry today make it the most important product of Trinidad, and its future is apparently one of great possibilities. It now forms the Colony's leading export and represents more than 37 per cent of the total.

Increased Drilling Expected in 1928

The present overproduction of oil in many countries has operated to keep down production in Trinidad. In the event of any considerable improvement in world market conditions the Trinidad output doubtless would show large increases. At present most of the operating companies are confining their activities to refining and shipping the oil obtained from flowing wells. Drilling, even in fields already proved, is declining at present. In the beginning of 1928 increased activity throughout the island is anticipated, as the government is expected to render a decision regarding the leasing of additional Crown lands. Increased drilling programs, however, must hinge upon improvement in foreign market conditions or the construction of additional storage facilities.

QUALITY SERVICE

OKLAHOMA IRON WORKS TULSA, OKLA.

Travelling Block

HEAVY DUTY—TWO SIZES—

66″ 5200 lbs. 4-30″ sheaves.
72″ 5800 lbs. 4-34″ sheaves

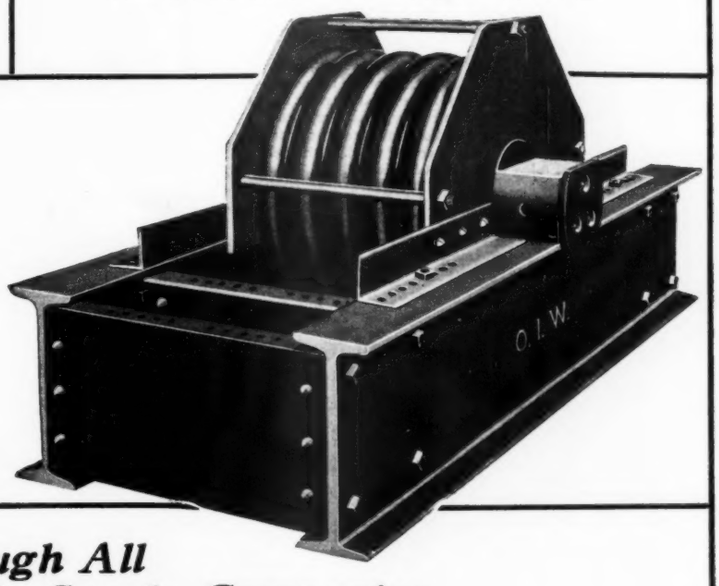
Side plates 2 inches thick, and 32 inches wide. Reversible oil heat treated center pin, 12 inches in diameter. 14½ inch O.D. roller bearings in sheaves. Sheaves are special alloy steel, oil heat treated. Grooves are machined in center of sheaves. Each sheave has a separate Alemite oiling system. Sheaves are interchangeable with those on Cormier Crown Block.

Hardness of steel in sheaves conforms with that of wire line used, eliminating wear. 6 inch diameter, oil heat treated, lower pin carries a heavy forged steel clevis or pendulum and spool for snub line. 3 inch diameter, oil heat treated, upper pin carries a heavy cast steel separator for separating plates. All pins held in place by O.I.W. new pin locking device. Steel guards, hinged, comply with safety regulations. *Write for descriptive bulletins.*

Crown Block

CORMIER PATTERN
Weight with 5-30″ pulleys 5230 lbs.
Weight with 5-34″ pulleys 5495 lbs.
I-Beams, (2) 18″—90 lbs. 7 ft. 4 inches long.

I-Beams tied together with box girders, bolted each end. Reversible oil heat treated center pin. Center pin 12 inches in diameter. 14½ inch O.D. roller bearings in pulleys. Pulleys are special alloy steel, oil heat treated. Grooves are machined in center of pulley. Each pulley has a separate Alemite oiling system. Pulleys are interchangeable with those used on travelling block.
Hardness of steel in pulleys conforms with that of wire lines used, eliminating wear. Five pulleys are arranged on the one center pin—either 30 or 34 inch diameter pulleys. I-Beams are perforated so center pin and pulleys can be shifted to any desired position. The crown block illustrated below is adapted for rotary drilling. By adding two short I beams with bearings and sand line pulley, this type can be converted to cable tool drilling. Can also be placed in position on top of derrick by sections conveniently arranged.



Sold Through All
Responsible Supply Companies

OKLAHOMA IRON WORKS

Manufacturers

TULSA OKLAHOMA

The Chain You'll You Know
SS-40 Plus

THE high points that made Link-Belt SS-40 Plus and SS-124 Plus Chains the favorites of the driller, are the curled roller, heat treated sidebars, and special nickel alloy steel pin.

Each of these is the result of Link-Belt's many years' practical experience in mak-

When you know the make-up of a chain you know why its performance is unequaled. When you use it on your rigs, you'll remember where you got it.

The pin is made to stand up and to take without injury, the tug, pull, yank, and twist that go with the action of a rotary rig. Its core is tough and strong, and its surface hard and wear-resisting, and the metal used is the best of nickel alloy steel, case hardened.

The sidebar is offset, which helps guide the chain more easily onto the sprocket. Made from selected .40% carbon steel stock, heat treated for strength—not from ordinary mild steel — firmly gripping both the pins and bushings.

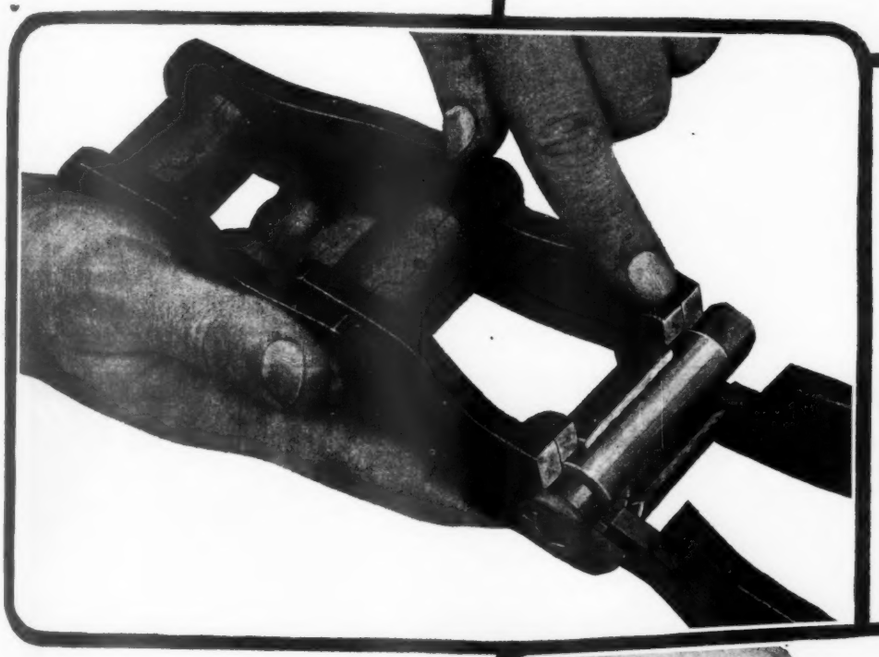
This double arrow >——< trade-mark identifies Genuine Link-Belt Chain

LINK-BELT COMPANY
Leading Manufacturers of Elevating,
2676 WOOLWORTH BLDG.,
Cable and Radio

LINK-
SS-40+ PLUS ROTARY CH

Demand When its Record
SS-124 Plus

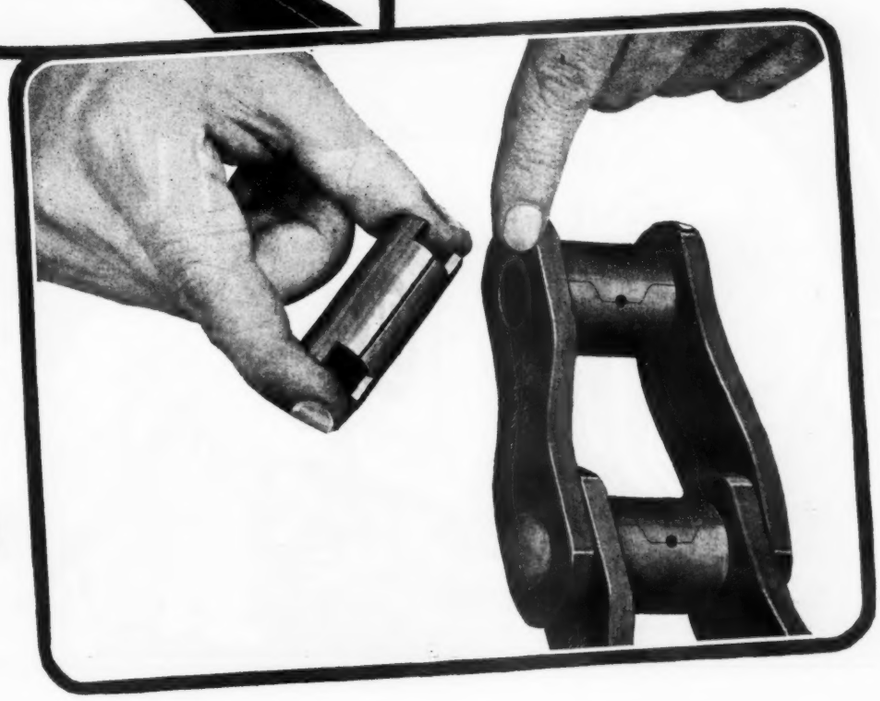
ing super-service drilling chains. Each is partly responsible for the drilling records made with Link-Belt SS-40 Plus and SS-124 Plus Chains. But it's their combination in each chain that makes drillers pick SS-40 Plus and SS-124 Plus. Specify genuine Link-Belt Chains—and may the best crew win!



The curled roller, with its springy resilience, puts fight into the roller. It easily whips the stresses and blows of rough, grueling service. Made of special alloy strip steel, accurately curled, and heat treated to give hardness, resilience and toughness.

This is the famous bushed-joint construction which is original with Link-Belt. The construction is such that a minimum of wear takes place in the joint, and elongation of chain is almost nil. Pin held stationary in outer link by milled end, and bushing keyed to inside links, to prevent rotating.

The bushings maintain uniform spacing between the sidebars, into which they are press fitted, and locked to prevent rotation. Made of cold rolled strip steel, accurately curled to size and case-hardened. The loads and stresses are carried on its smooth, hard bearing surfaces without appreciable wear, even after long use.



Look for it on every link . . . it's your guaranty of quality - - -

INDIANAPOLIS, IND.

Conveying, and Power Transmission Chains

NEW YORK, N. Y., U. S. A. 2966

Address "Linkbelt"

LINK-BELT

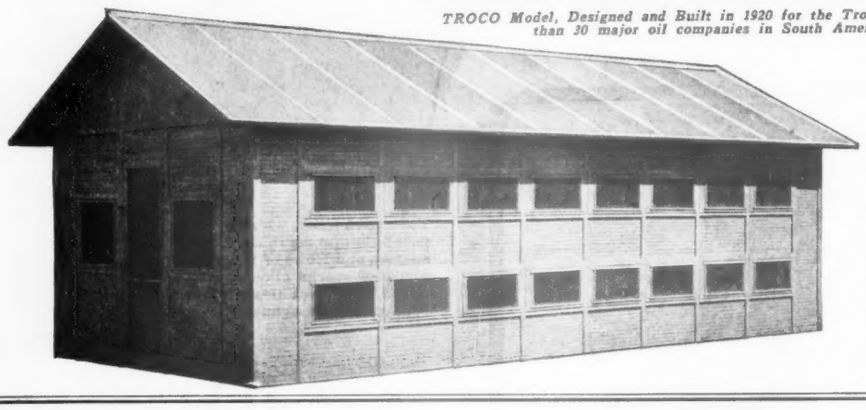
CHAIN SS-124 PLUS

CLOSE-TO-NATURE PORTABLE BUILDINGS

PORTABLE CANVAS HOUSES

Regular Model with Single Canvas Roof; Troco Model with Steel Roof above Canvas Roof; Stanco Model with Canvas Roof above Canvas Roof. Perfect protection from weather and insects while giving abundance of fresh air. Shutters slide upward to close openings. All openings covered with bronze screening. Houses easily taken down and rolled into convenient bundles for handling, the canvas being permanently attached to the frame parts except roof and gables. Close-To-Nature Canvas Houses are used in many parts of the world.

TROCO Model, Designed and Built in 1920 for the Tropical Oil Company for use in Colombia. Now used by more than 30 major oil companies in South America, Mexico, Central America, and West Indies.



BUNK HOUSES

100% Portable

Built for use wherever a light, strong, building is required that must be erected and taken down often for moving. Light 3-foot sections. No loss or deterioration of materials. No experienced labor required. Rustless bolts. No roofing to lay, no loose rafters. All joints weather and insect proof.

For complete information on all kinds of portable buildings, address.

CLOSE-TO-NATURE CO.
666 Front St., Colfax, Iowa, U. S. A.

"—and always use OK SUPER-OIL-WELL CEMENT"
SUPER OIL-WELL
OK
SUPER OIL-WELL
1928
For practical oil men—a good resolution for 1928.
Remember—that O K SUPER OIL-WELL CEMENT is a dependable product It is specially processed to set quickly but will "stand up" when submerged in water
See our nearest dealer or write us direct for additional information
Oklahoma Portland Cement Company
1018 Perrine Building Oklahoma City

CANADIAN FIELDS

(Continued from Page 69)

over the cellar and steam from the boiler forced through two 2-inch pipes into the burning debris.

Seneca Oils, LSD 1, Section 34-20-3w5, is reported to have got a small show of crude oil at 3,500 feet. The oil, apparently met in a sand at the base of the Benton shale horizon, was a dark green crude around 34 degrees Baume. A little gas came with the oil, but it is not a commercial producer. Drilling is continuing at 3,600 feet, and a second show is looked for in the first Blairmore (Dakota) sand with commercial production likely in the second Blairmore sand.

Dalhousie Oil Co.'s No. 1, LSD 4, Section 18-20-2w5, is drilling around 4,384 feet. The test is in the top of the Madison and should be near the wet gas horizon. Dalhousie's No. 5, LSD 16, Section 30-19-2w5, is at 4,762 feet and drilling. Dalhousie's No. 6, LSD 10, Section 13-20-3w5, is at 4,517 feet and installing a new boiler.

Foothills Oil & Gas Co.'s No. 1, SW Section 26-20-3w5, is at 3,498 feet and underreaming, after releasing a rotary drill stem which was stuck in the hole.

Home Oil Co.'s No. 2, LSD 14, Section 20-19-2w5, is at 3,175 feet and waiting for cement to set.

Royalite Wells

Royalite Oil Co.'s No. 6, LSD 16, Section 30-10-2w5, is at 3,450 feet and drilling. Royalite No. 7, LSD 3, Section 13-20-3w5, which made an average of 22.7 bbls. daily production of crude naphtha in the first week on the line, is reported to be doing considerably better. Royalite's No. 8, Section 12-20-3w5, is at 2,636 feet and again rigging up. Royalite's No. 9, LSD 6, Section 13-20-3w5, is at 2,273 feet and drilling. Royalite's No. 10, NE Section 12-20-3w5, is at 1,890 feet and running the 12½-inch casing.

With these nine tests already drilling, the various Imperial Oil, Ltd., subsidiaries are reported planning considerable additional work this coming year in the Turner Valley Field. It is understood that 10 rotary outfits have been ordered, and that at least 15 Imperial outfits will be drilling in the Turner Valley in 1928. The geological work in preparation for the 1928 drilling has been finished, and several tentative locations are understood to have been made.

It is reported that in the southern part of the field the Dalhousie Oil Co. will drill at least three new tests. One of these is stated to be in Section 29-19-2w5, approximately a half mile south of Dalhousie's No. 5. The latter well got a fine showing of light crude in the Fernie shale horizon, and the new drilling in this area is apparently planned to further test this horizon, though doubtless it will be continued to the Madison limestone horizon. Another tentative location is in either LSD 3 or LSD 7, Section 20-19-2w5, south of Home's No. 1, which also has crude oil production in the Fernie. A third tentative location is in SW Section 30-19-2w5; it is in this section that Dalhousie's No. 5 is drilling. It is reported that, following the showings in the Fernie shale in this area, closer geological investigation has located a superimposed structure in Section 19-19-2w5, and Section 20-19-2w5, this structure indicating a possibility of crude oil production on a substantial scale.

New Locations

In the west central section of the Turner Valley, Royalite Oil Co. is reported to have two tentative locations for Nos. 11 and 12 wells. One of these is in Section 12-20-3w5, north of McLeod's No. 3 Dakota sand producer, and in the other is midway between McLeod's No. 3 in LSD 16, Section 1-20-3w5, and New McDougall-Segur's No. 2, LSD 14, Section 12-20-3w5. Both the latter wells are also Dakota sand producers.

No information is available as to prospective new drilling in the north end of the valley, but it is expected the Foothills Oil & Gas Co. will drill some additional tests in that area, regardless of the results secured by Foothills' No. 1 in SW Section 26-20-3w5. In this area, besides the Foothills' No. 1 at approximately 3,500 feet Seneca Oils has a test at around 3,600 feet, and both these wells are likely to get definite results before the new work is started in the spring.

Calmont Oils, LSD 2, Section 1-20-3w5, has resumed drilling after a shutdown at 4,530 feet to repair the brake wheel. The test is drilling through 8¼-inch casing. Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, is at 4,400 feet and shut down. The tools were lost in the hole and had just been fished out when the shaft of the bull wheel broke. A new shaft is being secured from the New York-Alberta Oil Co. outfit.

British Dominion Oil Development Corp., LSD 4, Section 5-20-2w5, is at 6,116 feet and drilling, with casing down to 6,048 feet. The work of running the casing was held up nearly a week owing to the extreme cold. Recent samples indicate that the formation may be changing, with the possibility that the drill is entering the Madison limestone. As this is the deepest point at which the Madison has yet been met in the Turner Valley, the outcome is being awaited with considerable interest.

Bailing Light Crude

Vulcan Oils' No. 2, LSD 11, Section 13-20-3w5, is at 4,050 feet and drilling. The test is bailing from 15 to 20 bbls. of light crude per day, this apparently coming from higher levels behind the casing. At the present depth the test is within 1,000 feet of the wet gas horizon in the Madison limestone production in Vulcan's No. 1 at 5,004 feet. Spooner Oils' No. 1, LSD 12, Section 13-20-3w5, is drilling at 4,840 feet, with a wet gas flow of approximately 1,000,000 feet a day. The test is 185 feet in the lime, and close to the main producing horizon.

Regent Oil Co.'s No. 1, LSD 16, Section 1-20-3w5, is shut down at 2,710 feet.

Shareholders of the Advance Oil Co. held their annual meeting recently at Calgary, when the following directors were elected: J. Wordie, J. H. McDonald, E. A. Freeman, R. Taylor, W. D. Lundy, E. Moorehouse, E. T. Hammond, F. L. Heath. W. D. Lundy is president. The balance sheet of the company showed the following assets: Turner Valley leases, $45,027.35; Ribstone leases, 160 acres, $20,000; No. 5 derrick, $1,204.25; casing, $1,950; development in the Ribstone-Blackfoot Field, $38,668.50; C. N. R. bonds, $39,400; accounts receivable, $13,639.59; cash, $539.28. The company has an authorized capitalization of 300,000 shares, of which 226,607 have been issued. The company some time ago disposed of a block of 40 acres in the Turner Valley Field to the Home Oil Co. Advance Oil Co.'s No. 5 has been located in LSD 16, Section 19-19-2w5, in the Turner Valley Field, not far from the Home No. 1 and Dalhousie's No. 5 producers; T. J. Sugars and associates of Edmonton have the drilling contract for a consideration of $40,000 cash, $15,000 worth of stock and $10,000 worth of Turner Valley leases, the Advance Oil Co. to supply derrick, camp, buildings and casing. Of the contract money, the company holds $25,000 to assure drilling to a maximum depth of 4,500 feet or to commercial production. A rotary outfit will be used for the test, which will probably spud in this month; it has been held up owing to the derrick being wrecked in a gale.

In the southern foothills, Imperial Oil, Ltd's, Highwood No. 1, LSD 3, Section 36-18-3w5, is reported at 3,600 feet and drilling.

In the Aldersyde district, south of Calgary, Ranchmen's Gas & Oil Co., LSD 16, Section 13-20-29w4, is below 2,300 feet and drilling, with 10-inch casing down to the 2,300-foot level.

In the Moose Mountain district, Signal Hill Oil Co.'s No. 2, LSD 9, Section 34-23-5w5, has resumed drilling at 1,677 feet after underreaming to that depth. Casing is down to 1,600 feet. The drill is apparently near the base of the Benton shale horizon and close to the top of the Blairmore (Dakota) in which there are two potential oil horizons.

Skiff Field

In the Skiff Field, southern Alberta, Devenish Petroleum's No. 1, LSD 5, Section 27-5-14w4, has started to flow heavy crude in small quantities from the sand at 3,090 feet. The well was recently finished in this sand after drilling to the top of the Madison in the hope of deeper production, and arrangements had been made to put it on the pump, but owing to bad roads and unfavorable weather conditions the pumping equipment could not be hauled from the railroad siding at Skiff. The well when hooked up with a storage tank flowed 50 bbls. in seven days from an 8¼-inch casing, though there seemed to be very little gas behind it. Before being deepened the well had a bailing production of 250 bbls. a day. It will probably be put on the pump about January 1. Imperial Oil, Ltd.'s refinery at Calgary will take the production.

United Oils, Ltd., held its annual meeting at Calgary recently when the following directors were re-elected: R. A. Brown, William Ardern, F. M. Compton, F. J. Green, W. M. Conacher. According to the balance sheet the company's investment in Devenish Petroleum, Ltd., amounts to $38,550.42, and it has funds on hand for considerable drilling. Next season United Oils, Ltd., will drill one test in the Skiff Field, and another in the Turner Valley where it also holds some acreage. United Oils, Ltd., also controls the United Gas Development Co., which originally opened the Foremost gas field and has a contract with the Canadian Western Natural Gas, Light, Heat & Power Co. for the handling of gas production from that area.

Southern Alberta

Vancouver financial interests are reported to have secured control of extensive oil rights in southern Alberta originally included in land grants made by the Dominion government 35 years ago to the Calgary & Edmonton Railway Co. The charter for the railway company was secured more than 35 years ago by Mackenzie & Mann, who in connection therewith received a land grant of approximately 1,000,000 acres in southern Alberta. This grant carried with it the oil and gas rights. Nearly all of this land was sold to the Calgary & Edmonton Land Co., organized at London, England, with shareholders throughout Great Britain. This company has since disposed of some 95 per cent of its original land holdings. A year or more ago Vancouver investors began to buy into the company and later discovered the existence of the oil rights. The Calgary & Edmonton Land Co., in selling the land itself, customarily reserved the oil and gas rights. The acreage in southern Alberta checkerboards a number of anticlines, including part of the Turner Valley Field.

In the Pincher Creek district, Mount Royal Oil & Gas Co.'s No. 1, LSD 4, Section 7-6-1w5, at 980 feet in the Dakota formation, is shut down owing to the freezing of the water pipes. In the Waterton Lakes section, the Henry L. Doherty Co. test has the cement rig base finished and is waiting for the rig builders. Derrick materials are on the site.

In the Warner district, Gas Production & Transportation's No. 1, NE Section 21-4-18w4, is at 1,870 feet and running 10-inch casing. The drill is reported in the Benton shales.

At Coutts, Alta., the Beaver cracking plant is reported temporarily closed down.

Ontario Fields

In Dawn Township, Lambton County, Ontario, Union Natural Gas Co.'s No. 20 is reported drilling at 1,900 feet. This is below the usual gas level in the Dawn Field, but drilling will be continued a little further, though the well looks like a dry hole.

In the old Tilbury Field, Union Natural Gas Co.'s No. 278, Radmor farm, and No. 279, Shanks farm, both in Romney Township near Port Alma, are shut down owing to cold weather, which has cut off the water supply.

In Dover Township, Kent County, the Ajax Oil & Gas Co.'s test on the Gilbert Reamue farm, offsetting the Union Natural Gas Co.'s No. 1 producer, is reported drilling below 2,500 feet.

In a statement recently issued to shareholders, the Petrole Oil & Gas Co. of Toronto reports that its wells in the eastern extension of the Trenton Field in Dover Township are maintaining their production. The Petrol company originally drilled three deep tests to the south and east of the productive area delimited by the Union Natural Gas Co. drilling, and in two of these a fair gas production was secured. This gas is sold to the Southern Ontario Gas Co. No further drilling has been done in the Dover area by the Petrol company for a number of years, but in the past year a test was drilled on the Six Nations Indian Reserve near Brantford to a depth of 2,880 feet. This was a Trenton test. A shallow hole in the same area was put down to 800 feet. Oil showings were obtained in both tests, but no commercial production. Another test is being drilled within a few hundred feet of two producing wells; at 395 feet this test has encountered a fair gas flow, estimated at 30,000 feet a day. Drilling will probably be continued.

GULF COAST FIELDS

(Continued from Page 67)

gravity oil daily from the deep sand at 6,950 feet, and No. 42 Gladys City making 185 bbls. of pipe line oil from a sand at 3,930 feet. The latter test was drilled to a total depth of 5,875 feet but was plugged back. These tests are in the deep sand extension to the south and to the west of the original cap rock field.

Gulf Production Co.'s No. 9 Daisy Roche and Sun Oil Co.'s No. 6 McLean at Spindletop were abandoned during the week. The former was drilled to a total depth of 4,276 feet and the latter to 5,750 feet.

Gulf has made a location for No. 8 Jack & Duff following the completion of No. 6. Battleship Oil Co. (Hines Oil Co.) also has made a location for No. 3 Parker on the P. Humphrey's Survey, while Yount Lee Oil Co. has made two locations, Nos. 49 and 50 Gladys City. The Battleship Oil Co.'s test will be of particular interest as it is on the north east flank of the old cap rock field. Flank development so far has been principally on the southeast, south and southwest. The new Yount Lee tests will be on the west and their locations are the fartherest north of the southwestern flank development.

Gulf Production Co.'s No. 10-A Marrs-McLean at Spindletop is drilling around 5,444 feet. No. 7 Jack & Duff is drilling at 1,881 feet; No. 17-A Marrs-McLean at 2,913 feet and No. 18-A at 2,572 feet. Rio Bravo Oil Co. is bailing for a test in No. 2 T. & N. O., having a sand around 3,400 feet. Sun Oil Co. has started drilling in No. 1 Coit and is down around 925 feet. Sun's No. 11 McLean is drilling below 4,500 feet and No. 18 McLean at 3,560 feet. The latter company also made locations the past week for Nos. 19 and 20 McLean.

At Big Hill, Freeport Sulphur Co. has abandoned No. 4 Staiti after drilling to 1,067 feet. It also made location for No. 6 Staiti. No. 5 is being rigged up.

Liberty County

Harrison Oil Co. has abandoned No. 2 Jones at North Dayton after drilling to 2,450 feet. This test was brought in several weeks ago pumping 50 bbls. of pipe line oil but salt water soon started and ruined the well so the hole was deepened to its present level without success.

At Hull, Gulf Production Co. got a good well in No. 43 Phoenix, flowing 2,100 bbls. from sand at 3,124 feet. This is an old well deepened and the company already is making arrangements to deepen its No. 48. No. 87 Phoenix is drilling at 4,960 feet, and No. 11 Thomas fee at 3,801 feet. Humble Oil & Refining Co. is fishing and trying to clean out the hole in No. 10 Hooks-Bell preparatory to deepening the well. Republic Production Co. is bailing No. 39 Dolbear to test a sand around 2,400 feet. No.

NEW TRAIN
-better serving West Texas Oil Fields
-faster time actual overnight service
Thru Sleepers

Abilene
San Angelo
Lubbock
El Paso
and West Texas
Oil Field
Points

SCHEDULE
GOING

Lv. Dallas	8:20 pm
Lv. Fort Worth	9:20 pm
Ar. Big Spring	5:00 am
Ar. Midland	6:23 am
Ar. Odessa	6:57 am
Ar. Pyote	8:30 am
Ar. Pecos	9:10 am

RETURNING

Lv. Pecos	6:30 pm
Lv. Pyote	7:08 pm
Lv. Odessa	8:33 pm
Lv. Midland	9:07 pm
Lv. Big Spring	10:30 pm
Ar. Fort Worth	6:55 am
Ar. Dallas	8:10 am

Connecting with Bus Service to the oil fields

SAN ANGELO SLEEPER
Lv. Dallas . . . 9 00 PM
Lv. Ft. Worth 10:30 PM

TEXAS AND PACIFIC RAILWAY

GEO. D. HUNTER
Gen. Passenger Agt.
Dallas, Texas

89 Dolbear is drilling around 4,110 feet. The Texas Company has set strainer and is washing in No. 2 Hannah fee. This test is down 3,100 feet. The Texas Company-Vacuum Oil Co.'s No. 7 Hannah is drilling gumbo and shale at 2,830 feet.

Yount Lee Oil Co.'s No. 1 Mitchell at Liberty is drilling around 1,200 feet.

Matagorda County

John Deering and associates have a 2,500,000-foot gas well in No. 4 Gray at Markham, Matagorda County, completed at 3,112 feet with a rock pressure of 620 pounds. This well was completed two weeks ago but was not reported until the past week. Rycade Oil Corp. and Humble Oil & Refining Co.'s No. 5 Kountz, also at Markham, is drilling deeper at 3,920 feet.

Orange County

Brownie-Babbette Oil Co. is making arrangements to deepen is No. 1 McLean and Gulf Production Co. is running in tools to deepen its No. 21 Lee Hager fee. The latter company's No. 7 Hager & Moore is drilling around 2,820 feet. Gulf Coast Oil Corp.'s No. 5 Leon is drilling at 3,455 feet. Rycade Oil Corp. is drilling in at No. 13-E State. This test is down 4,585 feet. Sinclair Oil & Gas Co.'s No. 4 Granger is drilling at 3,105 feet, and No. 5 Granger at 3,410 feet. Sun Oil Co.'s No. 2 Brown is drilling at 4,750 feet. Texhoma Oil Co. is bailing No. 3 Chessom to test a sand at 3,425 feet.

Washington County

Two new locations have been made in Washington County in the Somerville district. Both were made by the Sun Oil Co., one for No. 1-D Draeger and the other for No. 1-B Hunt.

Wharton County

Sun Oil Co. has abandoned its No. 4 Farmer at Boling after hitting salt at 2,510 feet. A location has been made for No. 5 Farmer. Gulf Production Co. is bailing two tests, No. 3 Abendroth and No. 8 Chase. The former is to test a sand at 1,346 feet and the latter one at 1,043 feet. Southern Exploration Co. has started drilling in No. 1 Mullins and is down 2,100 feet.

LOUISIANA GULF COAST

Acadia Parish

Cline, Smith & Cline have a rig up and are starting to deepen No. 1 Lucy Wilson, Evangeline Field. Evangeline Oil Co.'s No. 1 Cline is standing at 1,876 feet. Port City Oil Co. is drilling at 1,825 feet in No. 6 Jennings-Heywood, an old well being deepened. The Texas Company is drilling at 2,215 feet in No. 106 Latrielle. No. B-2 is waiting on a pumping rig. This company has reamed out below the 8⅝-inch casing set at 5,540 feet and is drilling ahead.

Calcasieu Parish

Gulf Refining Co. has abandoned No. 7 Lutcher-Moore after testing salt water at 5,212 feet. This test is on the north flank of the dome and makes the second Stark test abandoned in the last three weeks. No. 8 Industrial, the other abandoned test, was on the southwest flank of the dome. Gulf's No. 9 Industrial is drilling at 3,311 feet.

At Edgerly, Gulf Refining Co.'s No. 42 Bright Penn is pumping 25 bbls. net oil daily from sand at 3,751 feet. C. M. Crotty's No. 7 Lillard, also at Edgerly, is drilling below 2,375 feet. Edgerly Petroleum Co.'s No. 11 Vincent is drilling around 3,400 feet. Green Oil Co. is drilling at 1,400 feet in No. 9 Moore. Rex Petroleum Co.'s No. 1 Ecker tested salt water at 3,010 feet and drilled to 3,731 feet where it is standing. The latter company has just completed a derrick for No. 8 Hunter. Wilson-Broach's No. 6 Wilson is drilling below 1,425 feet.

At Lockport, Vacuum Oil Co. and Gulf Refining Co.'s No. 19 Miller is drilling sandy shale at 3,234 feet. For the last 10 feet there has been a fair showing of oil. These operators still are cleaning hole in No. 3 Farquahar and now have the hole clean to 4,338 feet. Total depth is 4,399 feet. Preparations are being made to drill plug at 4,413 feet in No. 3-A Faraquahar and also in No. 4 State at 4,410 feet. The latter has 1 foot of sand at 4,410-11 feet. No. A-1 fee is in a sand at 4,160 feet and is to core. No. 2 Frieber & Wolf is drilling blue shale at 5,940 feet.

Newton Drilling Co.'s No. 1 Dupre, near Lockport, has resumed drilling and is down below 2,530 feet. This test showed salt water at 2,508 feet and has been shut down several weeks.

At Vinton, Vinton Petroleum Co. has pulled strainer and will deepen No. 9 Gordon, which failed to make a favorable test at 2,775 feet. This company's No. 48 Gray also showed salt water at 2,840 feet.

Plummer Oil Co. has abandoned No. 1 Lyons, a Calcasieu Parish wildcat, after testing salt water at 3,750 feet. Lacola Oil Co. is making arrangements to whipstock casing at 3,350 feet in its No. 1 Benkenstein. This test has been shut down for several months at 4,268 feet.

Cameron Parish

At East Hackberry, Calcasieu Oil Co. is drilling around 3,300 feet in No. 1 Olevia. No. 2 Caldwell, the discovery well of East Hackberry Dome, found its production at 3,971 feet. Calcasieu also has a rig up for No. 1 Watkins. C. O. Noble and associates have started drilling No. 1 Ellender and are down around 350 feet. Yount Lee Oil Co. is getting ready to drill No. 6 State. In the old Hackberry district to the west, Yount Lee Oil Co. has set 10-inch surface casing at 943 feet in No. 7 School Land.

At Big Lake, Louisiana Land & Exploration Co. drilled water sand at 1,005 feet.

Pure Oil Co.'s No. 4 Sweet Lake at Sweet Lake Dome, is drilling hard sand and lime at 5,239 feet. No. 5 Sweet Lake is in water sand at 5,160 feet.

Miscelloneous

Tom Hincy and associates' No. 1 Ducide Guillery at Pine Prairie, Evangeline Parish, drilled rock at 2,340 feet. Ernest Hornberger has abandoned No. 1 Bullard, Jeff Davis Parish, it was reported the past week. Gulf Refining Co.'s No. 1 Broussard, Feussa Point, Iberia Parish, is drilling at 4,706 feet. No. Z-3 State in the same district is drilling at 1,176 feet. Louisiana Land & Exploration Co. set 12½-inch casing at 262 feet in No. 1-A Vermillion Bay, Iberia Parish. Jefferson Oil & Development Co. is drilling sand and gravel at 485 feet in No. 2 Salt Mine, Iberia Parish. Roxana Petroleum Corp. is drilling lime and shale at 1,083 feet in No. 1 Wilbert, White Cas.le, Iberville Parish, and on the Bayou Blue Dome in the same parish Union Sulphur Co. has started drilling in No. 1 Schwing. The latter company also is getting ready to drill in its No. 1 Wilbert, Bayou Des Glais Dome, same parish. Gulf Refining Co. has a rig up for No. 2 Stark on the Chacahoula Dome, LaFourche Parish.

Rycade Oil Corp. is fishing at 3,916 feet in No. 1 Atchafalaya, St. Martin Parish. This company has spudded in No. 2 Atchafalaya. Terrebone Gas Co. has abandoned No. 1 Guidry, Terrebonne Parish, after drilling to 3,200 feet. This test had a small showing of gas at 2,170 feet and 2,296 feet. This company is building a derrick for No. 4 South Down, which is 300 feet east of No. 3.

CALIFORNIA FIELDS

(Continued from Page 72)

will have an outlet for any production developed.

There is a considerable difference of opinion as to whether the General Petroleum opened up a new field in the Granite Canyon area approximately 3 miles southeast of the Mount Poso Field, some believing the discovery well is merely an extension of the Mount Poso Field, in which event the intervening area will all be productive. The Shell company will provide a definite answer within the near future as present plans call for a test to be drilled between the two areas in question. The Union is making preparations to put its No. 1 Tribe on a production test and this well, which is in Section 28-27-28, a little less than 1 mile south of the General Petroleum's 500-bbl. producer, looks almost certain to secure commercial production. The Union, incidentally, has this entire section, 640 acres, under lease and since only a limited amount of development work will be done for the present it will augment the company's exceptionally large crude oil reserves if found productive.

Seal Beach

The only development of interest in the Seal Beach Field was the recompletion of Paul Getty's No. 3 Cleaver, which was returned to production doing 225 bbls. of clean 27.1 gravity oil daily after being redrilled and deepened from 4,695 feet to the Wasem zone at 5,465 feet. This well incidentally showed an initial of 4,000 bbls. daily when originally finished last April. One of the most interesting drilling projects in this field is No. 16 Selover of the Marland which is rotating ahead in the oil sand at 6,377 feet, the outstanding feature being its depth. The California Petroleum chalked up a 100-bbl. pumper in the shallow zone at Huntington Beach and the oil from this new producer, No. 4 fee, which was finished at 2,150 feet, tests 14.1 degrees. Fred Bishop's No. 1 Huntington, located in the town lot area, came in doing 400,000 feet of wet gas daily when given a test from the 3,870-foot level after being plugged back from 4,079 feet and while no appreciable amount of oil has yet put in an appearance it may yield commercial crude oil production after the present gas flow has ceased. The Standard is rigging up rotary equipment in No. 60 on Lease B, in the Barley Patch area, north of the town lot section at Huntington Beach and it is possible the company will drill up the intervening area which was left open when the intensive drilling campaign got under way in the subdivided area late last year. During the early stages of this competitive drilling the Standard protected its Lease B from drainage by drilling two lines of offsets along the southern boundary and then switched its attention to the lease secured on the Pacific Electric's right of way which parallels the ocean front in the western part of the town lot section.

Inglewood

One new well and two recompletions were listed in the Inglewood Field. The former was No. 55 Baldwin of the Standard which came in pumping 122 bbls. daily from the 2,100-foot level. The Associated contributed both of the recompletions listed when Nos. 6 and 12 on the Vickers lease were returned to production after being cleaned out to bottom. The former started off pumping 190 bbls. daily while the latter was recompleted as a 55-bbl. pumper. There were no developments of particular interest in either of the Brea Olinda or Richfield districts. In the former area both of the Shell's deep tests, No. 40 Columbia and No. 2-A Puente are held up with mechanical trouble and consequently no additional footage will be made until a complete recovery has been effected. Deep drilling in the Long Beach Field has apparently diverted attention away from the Richfield district and as a result development work in the latter area has been greatly diminished. With the one or two exceptions development work in this district is again restricted to the major companies.

Northern California Wildcats

The General Petroleum failed to secure an effective water shut off in its No. 1 Kerwin, a wildcat in the Edison district, southeast of Bakersfield in Kern County, and the hole has accordingly been recemented. General Petroleum officials, while optimistic over the outcome, are maintaining a commendable conservative attitude. Others who have followed drilling operations in this area closely are almost certain that oil will be developed in commercial quantities as soon as the existing water trouble has been remedied. It may take another hole, however, to locate the top of the structure but in any event the General Petroleum will receive the most benefit as its holdings are scattered all through this entire area. Lease maps indicate that a number of other major concerns are also heavily interested in this section. The General Petroleum of course went into the district early and consequently has the largest amount of poten-

UNIFORM STRAIGHT BILL OF LADING
(PRESCRIBED BY THE INTERSTATE COMMERCE COMMISSION)

ORIGINAL---Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading.

From **REPUBLIC SUPPLY COMPANY**

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Agents No.

at Houston Texas 12/31 1927

Goodwill Ry Company Charge No.

Mail or street address of consignee—For purposes of Notification only

Consigned to Oil and Gas Industry

Destination Everywhere State of U.S.A. County of

Route Bigger & Better Times R.R.

Car Initial Xmas & H.N.Y. Car No. 1928

(Delivering carrier)

No. Packages	Description of Articles, Special Marks, and Exceptions	*WEIGHT (Subject to Correction)	Class or Rate	Check Column
1	Year with Oversized Prosperity	365000	1st	✓
	Marks Quality & Service			

If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges. *(See section 7 of conditions.)*

(Signature of consignor.)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Fully Prepaid

Received $ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier.

Per

(The signature here acknowledges only the amount prepaid)

Charges Advanced:

$

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

Note—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding value

per

REPUBLIC SUPPLY COMPANY, Shippers

Per All Hands

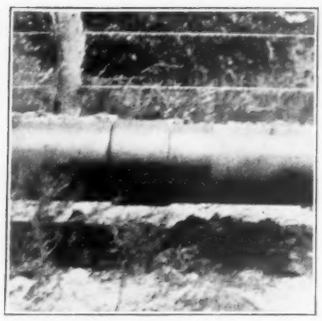
Permanent postoffice address of shipper, HOUSTON, TEXAS

Agent

Per

RECEIVED DEC. 31, 1927 GOODWILL RY. CO. AUDITOR'S AGENT

Reconditioning Pipe Line



To add years to the life of a pipe line, protect it so well at the start or in reconditioning, like the one here illustrated, that the next uncovering is deferred for several years.

The material that can do this is economical no matter what it costs.

Yet, NO-OX-ID and NO-OX-IDIZED Wrapper have been doing this for years—and because it is sold on the basis of what it costs to make in place of its actual service value, it is one of the lowest priced materials sold for the purpose.

If you are not "sold" on NO-OX-ID, read the impartial reports, give it the hardest kinds of tests, let us tell you what industries use it in large quantities.

DEARBORN CHEMICAL COMPANY

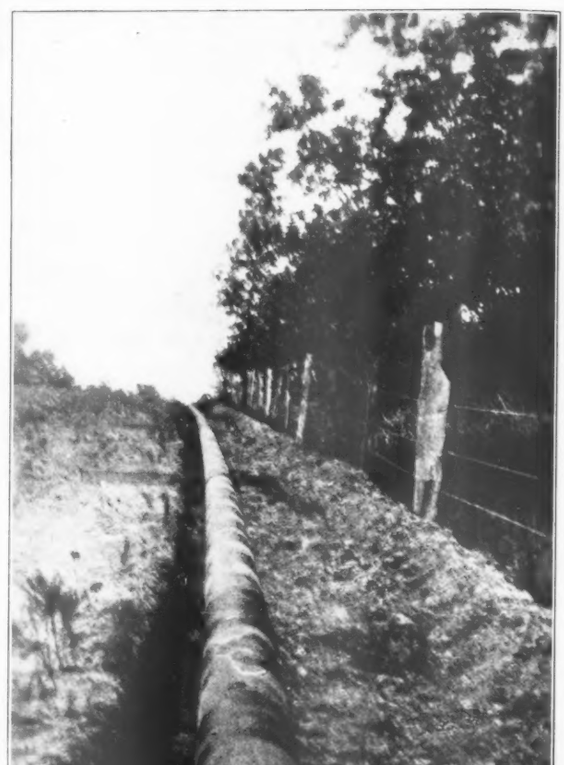
"A House of Chemical Engineers" In Its Fortieth Year of Service to Industry

310 South Michigan Ave., Chicago **299 Broadway, New York**

Canadian Offices and Factory: 2454-2464 Dundas St., West, Toronto

DEARBORN CHEMICAL COMPANY
NO-OX-ID-IZED WRAPPER
REG U.S. PAT OFF
NEW YORK CHICAGO

NO-OX-ID
IRON-OX-RUST
TRADE MARK
The Original Rust Preventive



ALFIT

TRADE MARK REGISTERED

The dough-like ALL METALLIC PACKING for GASOLINE, HOT and COLD OIL, TAR.

Under pressure forms a metal bearing. It remains from beginning to end, elastic, and does not burn out.

NO FRICTION, NO WASTE, NO LEAKAGE

The Vacuum Oil Company writes: "A Worthington Duplex gasoline pump was running 6 weeks, before it was necessary to take up on gland. It always holds tight."

Send for order to prove it to you. Money refunded if not entirely satisfied.

ALFIT PACKING CO., Inc., 299 Broadway, New York

Distributors Write for Territory

tial acreage and naturally paid the lowest bonus or rental. The Pacific Eastern is still drilling ahead in its Union Avenue wildcat at Bakersfield and while this deep test has shown several thin but saturated oil sands from time to time nothing of major importance has been logged since passing through the first or upper zone. The same company's wildcat at Fruitvale, a few miles northwest in Section 21-29-27, is drilling ahead in a hard gray sand at 3,710 feet.

The Shell company recently closed a lease with the Miller & Lux Land Co. covering a total of 4,360 acres a few miles northwest of the Elk Hills Field and it is understood this property will be given a conclusive test during the summer. Elliott & Clark have suspended drilling operations on their Santa Ynez wildcat in Santa Barbara County at 3,637 feet but it is believed these operators will drill another test or two because of the vast amount of acreage which they have tied up. Geis & Bradford, who recently opened up a new field on Sulphur Mountain in Ventura County, have deepened their discovery well and the 300 feet of additional hole added may double the initial production. The Shell will probably start a series of structure holes soon in the Oxnard region where the company has something like 10,000 acres under lease. The original leases in this area expired a month or so ago but the company succeeded in securing renewals of leases and an extension of time at the last minute. The anxiety of the Shell to secure renewals indicates that an early development program is in prospect. A number of other operators have acquired protective acreage and for this reason the Shell's posthole tests will be watched with considerable interest.

Southern California Wildcats

Wildcatting activities in southern California were broadened to include the city of Seal Beach and since this name is more or less familiar to the industry because of the existence of the Seal Beach Field it might not be amiss to call attention to the fact that the new wildcat to be drilled at Seal Beach is located within the corporate limits of that municipality and does not bear any relationship to the present Seal Beach Field. The electorate of Seal Beach voted several months ago to permit development work within the corporate limits and while several community leases have been tied up Getty is the only operator to make any definite move toward starting actual work. Getty's new test, which will be designated as No. 15 Seal Beach, is located in the same general vicinity as the wildcats drilled by the Seal Beach Oil Co. and H. B. Dabney several years ago. This new test, which is in Section 14-5-12, will undoubtedly be watched very closely especially since there is a possibility of opening up a new field at this point and also because the Seal Beach Oil Co. actually logged several favorable indications during the course of work. Both Dabney and the Seal Beach Oil Co., if the writer's memory is not at fault, showed evidences of an accumulation of oil but subsequently encountered water trouble and consequently neither hole can be considered as a satisfactory conclusive test. Attention was directed to the potentiality of this area six or eight months ago, at which time it was stated that this vicinity warranted a test as its geographical position in relation to the Seal Beach Field was somewhat comparable to the relative position existing between the older area of the Huntington Beach Field and the town lot area subsequently opened up along the ocean front.

The Associated is scheduled to make another production test of its No. 1 Cypress at Potrero and this field, which has already been opened up twice only to revert back to the semiproven stage because of water trouble, may be put in the production column again soon. The most interesting development in this section was the tentative location by the Associated of a second test to be drilled several hundred feet southwest of the original discovery, No. 1 Cypress. This new hole will be an exceptionally important one as the company's No. 1 Cypress has actually picked up two separate and distinct horizons, neither of which was encountered by wildcats subsequently drilled to the east. Carpenter & Smith, who have taken over the old Julian Petroleum wildcat a little southeast of No. 1 Cypress, have reconstructed the derrick and drilling will be resumed soon, the objective in view being to add another 1,000 feet of hole in an effort to pick up the lower horizon. There is a very persistent rumor that the Associated has picked up an oil sand in its No. 1 Patterson, a wildcat near Pico, but this could not be confirmed as the company is not putting out any information on this test. It might be well to watch future operations in this section, however, as the Associated has selected a very favorable locality.

LA.-ARK. WILDCATS

(Continued from Page 64)

1912-13 but soon went to salt water. It blew in with an estimated 5,000,000 feet of gas and 5,000 bbls. of salt water at the same depth December 1, was killed and pulled and reset 6-inch casing at 2,600 feet, resulting in cutting off most of the water.

In Catahoula Parish S. D. Hunter abandoned No. 2 Tensas Delta, Section 21-9-7, as a dry hole at 3,200 feet. Location is about 5 miles east of the Lochnager Oil & Gas Co.'s Beasley & McMillam wells now drilling and Lochnager's No. 1 Beasley, which staged an estimated 15,000,000 feet of gas and 15,000 bbls. salt water blowout two or three months ago.

Roxana Petroleum Corp. abandoned No. 2 Tensas Delta in Section 1-14-5, Richland Parish, as a dry hole at 2,637 feet. Location is about 8 miles south of nearest production in the proven gas area of Richland Parish.

Arkansas' contribution to wildcat completions was Lenz and others' No. 1 Mann in Section 22-15-26, Miller County, which tested dry at 3,030 feet. About two months ago it was the cause of hurried trips to location by some of the scouts on the strength of a reported oil show but which failed to develop more than the barest show.

Lake Bisteneau Wells

Two wells of the Lakeside Oil & Gas Co. drilled on state land in the bed of Lake Bisteneau in Bienville Parish in 1921 and which have been blowing gas and salt water ever since; Nos. 1 and 3 State in Sections 16-16-10 and 21-16-10, respectively, were plugged by the State Department of Conservation after giving five days' notice to the owners as the climax of protracted fruitless efforts to get action by. A siphon has been installed in No. 2 State and the gas is being used to fuel another wildcat, Lake Bisteneau Oil & Gas Co.'s No. 1 State in Section 16-16-10, which has 6-inch casing set to test 3 feet of sand at 2,538-21 feet. The Lakeside Oil & Gas Co. wells came in for fairly good open flow, No. 1 with 10,000,000 feet at 2,526 feet on March 13, 1921, and No. 2 with 45,000,000 feet at 2,540 feet on July 31, but went to salt water not long after. When the Lake Bisteneau company's well is finished No. 2 State also will probably be abandoned.

The Bassfield Oil Co. (Cherokee Petroleum Co.) cored 2½ feet of sand in No. 1 Burkett, Section 14-6-18, Jeff Davis County, Mississippi, during the early part of the week, and the newspapers carried reports that it was a 1,000-bbl. well The facts are that the core showed oil and sand and on ether test there was enough oil in it to give a half ounce or so of ether a color slightly lighter than red engine oil. At present 8¼-inch casing is being run to set at 3,134 feet, the core being taken at 3,140-42½ feet for a test probably not before January 15.

NORTH LOUISIANA

Bienville Parish

Edwin J. Forrest's No. 1 Perritt in Section 11-17-6, shut down at 2,520 feet since October 26, has resumed operations and is reaming to bottom. Lake Bisteneau Gas Co.'s No. 1 State, Section 16-16-10, cemented 6-inch casing at 2,519 feet to test 3 feet of sand at 2,528-31 feet. Louisiana Petroleum Co.'s No. 1 Hays, Section 18-16-5, is reaming to bottom, 2,450 feet.

Bossier Parish

Doern and others, drilling No. 1 Bollinger in Section 9-22-11, are drilling chalk rock at 3,275 feet, corrected depth, previously reported drilling at 3,410 feet. R. E. Hamiter and others, drilling No. 1 Hamiter in Section 10-23-13, have shut down waiting orders at 480 feet with surface casing set at 350 feet. Walker and others cored sandy shale at 2,632 feet in No. 1 Antrim, Section 28-22-13.

Caddo Parish

Arkansas Natural Gas Co. began drilling No. 1 Alexander in Section 20-16-15, December 20, and has made 200 feet of hole. Belchic & Laskey have started a semiwildcat in Section 11-18-16, west of Blanchard, having derrick up and rigged for No. 1 Boynton-Croom, 1,980 feet west and 660 feet south of NE cor. of the section, and 10-inch surface string set at 102 feet. Greenwood Production Co.'s No. 1 Cooper & Ellerbe, Section 15-18-14, just north of Shreveport, was dry on drill stem tests at 2,000 and 2,015 feet, and is drilling at 2,300 feet, after a show for 500,000 feet of gas in the shallow Greenwood, or Nacotoch, sand at 935 feet. Woodley Petroleum Co.'s No. 5-B Knight in Section 39-15-12, is drilling at 1,900 feet and Woodley & Collins' No. 1 McVet, Section 23-19-14, cemented 6-inch casing at 2,525 feet and is drilling at 2,570 feet.

Catahoula Parish

Lochnager Oil & Gas Co.'s No. 2 Beasley, Section 26-9-6, is drilling at 3,090 feet after fishing out several joints of drill stem lost at 3,070 feet, total depth 3,318 feet. No. 1 McMillan in Section 29-9-6, is coring at 3,376 feet. Standard Oil Co. is shut down waiting on fuel on No. 1 Tensas Delta, Section 23-8-5.

Claiborne Parish

Magnolia Petroleum Co. is coring another streak of lime in the Trinity group at 4,724 feet in No. 1 C. C. Lee, Section 16-22-8. El Dorado Chief Oil Co.'s No. 1 Jones, Section 8-20-6, reported with derrick up on December 1, has not progressed beyond that stage.

DeSoto Parish

Carlton Drilling Co.'s No. 1 Stevens in Section 12-11-16, Logansport area, is drilling at 375 feet. Dixie Oil Co.'s deep test in Section 9-12-11, No. 1 Jenkins, is drilling lime at 5,892 feet. J. W. Downey's No. 1 Dickson in Section 24-14-13, is shut down at 1,050 feet with 10-inch surface string set at 100 feet. Foster and others are drilling No. 1 Johnson, Section 7-10-13, at 1,625 feet.

Grant Parish

W. D. Ball and others have shut down at 2,106 feet on No. 1 Calhoun, Section 4-7-4w.

Richland Parish

Gulf Refining Co.'s No. 1 Millsaps in Section 8-17-6, 6 miles north of production, has cemented 8-inch at 2,311 feet for second string. Moody & Seagraves' No. 1 Osborn in Section 14-15-5, has cemented 6-inch string, casing at 2,292 feet. Southern Carbon Co.'s No. 1 Sartor in Section 20-18-8, is drilling at 2,248 feet.

Sabine Parish

S. P. Borden and others' No. 1 Logan in Section 36-10-13, is drilling at 2,903 feet. Dixie Oil Co. is drilling chalk at 2,025 feet in No. 1 Steinfeldt, Section 20-10-12, after fishing out drill stem lost at total depth of 1,800 feet. W. G. Doern began drilling No. 1 Pickering Lumber Co. in Section 17-4-11 December 16, and has made about 100 feet of hole. L. M. Emlet has given up trying to make a well of No. 7 Bowman-Hicks, Section 14-7-14, at 3,560 feet, where it swabbed more or less 43 gravity oil and sanded up repeatedly, and is drilling at 3,584 feet, still in the Ouachita series.

West Carroll Parish

Following a salt water test of No. 1 White in Section 2-19-10, Palmer Corp. is arranging to go deeper, total depth at present being 2,466 feet.

Winn Parish

Ohio Oil Co.'s No. 2 Rolan, Account 1, in Section 5-12-1w, is drilling at 3,135 feet. H. M. Roark's No. 3 Southern Minerals Co. in Section 19-11-3w, previously reported abandoned in 70 feet of rock salt at 555 feet, has been revived and is drilling shale and boulders at 645 feet after going through rotten lime and sandy shale from 580-88 feet. The rock salt was left at 580 feet.

ARKANSAS

Nevada County

McDonald and others' No. 1 Pelt in Section 9-15-22, is drilling in lime at 2,223 feet after a salt water test of 18 feet of broken sand and shale at 2,173 feet.

Ouachita County

H. M. Harrell is arranging to set 1,590 feet of 6⅝-inch casing in No. 1 Ponder, Section 18-12-17, total depth 1,614 feet. Magnolia Petroleum Co.'s No. 1 Stout Lumber Co. in Section 28-14-16, is drilling at 3,400 feet.

Union County

Booth and others have temporarily abandoned No. 1 Rowland, Section 8-17-11, after a salt water test at 2,966 feet, total depth 3,104 feet. W. R. Keever's No. 5 Ezell in Section 12-17-15, just south of Smackover production, is drilling at 1,105 feet after setting 10-inch casing at 123 feet. He started drilling December 16. Lion Oil Refining Co. cored shale at 2,760 feet in No. 1 Horn, Section 17-17-13, after testing dry in 4 feet of sand at 2,639-43 feet. Pitcher and others' No. 1 Arkansas Timber Co. in Section 21-17-11, is drilling at 1,356 feet and Pitcher & White are down 1,510 feet with No. 1 Kinard in Section 17-15-19.

Bradley County

Johnson & Afams' No. 1 Southern Lumber Co. in Section 12-12-12, tested dry with no show of either oil, gas or salt water at 2,204 feet and will be drilled deeper.

Columbia County

Sunny Jim Oil Co. is drilling in gumbo at 2,000 feet on No. 1-A Runyon in Section 3-16-21, recently taken over from Big Creek Oil Co., which suspended operations after drilling to 800 feet with no casing in the hole. Sunny Jim set 81 feet of 10-inch casing for surface string.

Miller County

Guest and others' Saunderson in Section 14-15-26, is drilling at 1,850 feet, Miller County's other wildcat, Lenz and others' No. 1 Mann in Section 22-15-26, being abandoned as a dry hole at 3,030 feet.

EAST TEXAS

Shelby County

Magnolia Petroleum Co. is drilling broken lime at 3,336 feet in No. 1 Pickering Lumber Co. in the W. J. Crane Survey.

MISSISSIPPI

Alcorn County

A. M. Sutton, drilling Alcorn Petroleum Co.'s No. 1 Matthews in Section 14-2-7, has made arrangements for cable tools and will rig up to resume drilling, total depth, made with rotary rig, 649 feet.

Jeff Davis County

Cherokee Petroleum Co.'s No. 1 Burkett, Section 14-6-18, cored 2½ feet of sand at 3,137½ to 3,140 feet, the bottom of which showed traces of oil, and is coring and drilling deeper.

Lauderdale County

Lauderdale Oil & Gas Co. cored sand with a trace of oil in No. 1 Gunn, Section 13-7-16, total depth 2,810 feet, and is going deeper.

Lee County

J. P. Evans' No. 1 Whitesides in Section 16-9-7, is drilling sandy lime at 2,300 feet and arranging to set 6-inch casing after claiming a show of oil at around 1,700 feet and again at around 1,800 feet, neither of which was considered sufficient to warrant setting casing for a test. Lee County Petroleum Co.'s No. 1 Hickman in Section 12-8-6, is drilling at 950 feet.

Monroe County

Amory Petroleum Co.'s No. 1 Hall, Section 8-13-17, will pull 8-inch casing and sidetrack three joints of 6⅝-inch set at 2,370 feet. Mawk Oil Co. is arranging to set two joints of 20-inch surface casing and 40 joints of 12½-inch for second string and after that rig up with combination tools to continue drilling No.

PAINT THAT IS WATERPROOF ENDURES AND PROTECTS—

Because rust or rot cannot destroy unless moisture is present.

So here you have the big reason for the great popularity of VALDURA ASPHALT PAINT. VALDURA is made like other good paints . . . but with a foundation others lack; a foundation of 99.5% pure Gilsonite natural asphalt, the most perfect waterproofing substance the world has so far discovered.

While you are about it, you may as well enjoy this added protection and service . . . especially as it costs you no more.

VALDURA is applied like other paint . . . and it is the only really successful true Asphalt Paint obtainable in colors . . . in Red, Brown, and Green as well as Black.

AMERICAN ASPHALT PAINT CO.
844 Rush Steet **Chicago, Ill.**

Distributed by
THE NATIONAL SUPPLY COMPANIES

1 Searcy in Section 22-3-7, which has been shut down since November 3 awaiting financing. Trancontinental Oil Co. and The Texas Company, drilling No. 1 Day in Section 18-16-18, are in sand at 1,250 feet. Charles L. Tubb is arranging to rig up with combination rotary and cable tools to resume drilling No. 1 Bourland in Section 2-13-19. R. E. Zuendt has refinanced No. 1 Taylor, Section 30-14-7, and is arranging to resume drilling, shut down at 150 feet since August 7, waiting on 10-inch surface casing.

Webster County

Cumberland Oil Co. is drilling No. 1 Hesterly, Section 15-21-11, at 1,900 feet.

EASTERN FIELDS

(Continued from Page 58)

J. Kirby farm. In the same district, the South Penn Oil Co. is due in the Big Injun sand at a test on the J. Burke farm.

On Indian Creek, Murphy district, Ritchie County, the Hope Natural Gas Co. has completed in the Big Injun sand a test on the T. N. Johnson farm. It is a light gasser.

In McClelland district, Doddridge County, the Elkhart Oil & Gas Co. is fishing at 2,500 feet on the R. R. Chipps farm. In Central district, same county, Nay & Kintzer are fishing at 1,700 feet on the M. J. Minear farm. In New Milton district, G. H. and J. E. Trainer have a rig up for a test on the Lewis Maxwell farm. In the same district, the South Penn Oil Co. has a rig up on the A. W. Willias farm. The Columbia Carbon Co. has abandoned its second test on the Lewis Maxwell farm.

In Carroll district, Lincoln County, the Columbia Gas & Electric Co. completed a test on the S. W. Oxley farm and is a gasser in the Berea grit. In the same district, L. R. Sweetland has a gasser in the Big Injun sand at No. 24 on his own farm.

In Grant district, Cabell County, the Two Mile Oil & Gas Co.'s second test on the Ernest Mohr farm is a gasser in the Big Injun sand. In Liberty district, Marshall County, the Manufacturers Light & Heat Co. has a big Injun sand gasser at a second test on the D. M. Thorp farm. In the same district, the same company has a gasser in the Gordon sand at a test on the J. B. Miller farm.

Boone and Kanawha Counties

Operations in Boone and Kanawha Counties have fallen off quite rapidly in the past few months. Fewer wells are now drilling in these two counties than at any time in the past five years. In these two counties is located the Cabin Creek Field. In one particular, at least, this field was and still is unique. The oil produced is of a higher quality than that produced in any other part of the country, Pennsylvania not excepted. It is developed in the Berea grit, which is close and hard, and the actual status of a well cannot be determined until after shot. The oil is of 47 degrees gravity and rich in gasoline and lubricants of a superior quality. In color it is a light amber.

The most productive tracts in the Cabin Creek Field are the Williams Coal Co.'s tract and the Robinson, Pritchard and Lafollette tracts. No unusually large wells have been found in the field, but it has been developed conservatively, which will assure a long life for the producing wells.

This field was discovered by the Pure Oil Co., or what was known at that time as the Ohio Cities Gas Co. On the various tracts the Pure Oil Co. has drilled down to this time 268 wells on the Cabin Creek and Joes Creek sectors. Of this number, six came in gassers and seven were dry. This may be regarded as an exceptionally good record when the area of the field is considered. At the present time the Pure Oil Co. is drilling but two wells, Nos. 233 and 234 on the Williams Coal Co.'s tract.

The oil produced from the field is run by gravity to the Cabin Creek refinery, operated by the Pure Oil Co. When the Pure Oil Co. quite recently disposed, tentatively, pipe lines in West Virginia to the Eureka Pipe Line, the Cabin Creek properties were not included in the transaction.

Starting New Work

In some of the old West Virginia districts there is new work under way and starting. In New Milton district, Doddridge County, the Manufacturers Light & Heat Co. has made a location on the R. F. Greathouse farm. In McClelland district, the same company is rigging up on the J. Boyce farm.

In Union district, Harrison County, the Reserve Gas Co. has for the second time abandoned its deep test on the Chapman Smith farm. The failure to recover the casing lost in the well when drilling at a depth of 6,824 feet, induced them to abandon the hole. The well started to drill more than three years ago. In Coal Township, the Clarksburg Light & Heat Co. is drilling No. 258 and rigging up at No. 256 on the Gore Reynolds farm. In Ten Mile district, the same company has made a location on the C. A. Lanhan farm. In the same district, C. M. Lyons & Co. are due in the Big Injun sand on the Eva J. Goodwin farm.

In Hackers Creek district, Lewis County, the Standard Oil & Gas Co. is drilling at 3,390 feet at a test on the Vallard Lot. In McClelland district, Doddridge County, the Elkhorn Oil & Gas Co. has shut down at 2,000 feet on the Edward Tate farm. In Grant district, Cabell County, the Harshbarger Oil & Gas Co. has rigged up on the Addison Conner farm. In Barboursville district, Wilson & Nowery have started to drill on the Meadows-Harris farm.

In Union district, Lincoln County, Roy & McComas have started to drill on the S. W. Oxley farm. G. T. Ray & Son have started to drill a second test on the Mathias Stowers farm. In Carroll district, C. C. Wolfe has made a location on the Cremeans farm.

In Mannington district, Marion County, the Carnegie Natural Gas Co. has the rig completed for a test on the W. Grubb farm. In Sherman district, Calhoun County, the Sycamore Fuel Co. has a rig up on the L. H. Trippett farm. In Otter district, Braxton County, C. F. Engle is due in the Big Injun sand on the D. S. and C. F. Engle farm. In Center district, Gilmer County, the Chartiers Oil Co. is building a rig on the Baptist Missionary farm.

In Grant district, Cabell County, the United Fuel Gas Co. has made a location on the Nannie C. Bias and Mary J. Davis farm. In the same district, the Aetna Oil & Gas Co. is building a rig on the Herbert Hatfield farm. In Barboursville district, J. W. Creets is building a rig on his own farm.

Southeast Ohio

In Lot 10, Monroe Township, Holmes County, the Empire Gas & Fuel Co.'s test on the M. C. Bird farm is a gasser in the Clinton sand and good for 1,250,000 feet. In Section 18, Sutton Township, Meigs County, the Pure Oil Co.'s test on the T. J. Mitchell farm is an 8-bbl. pumper in the Berea grit. In the same township, and county, the Penna Berea Co. has completed No. 5 on the Hannah M. Capehart farm. It is a 4-bbl. pumper in the same formation.

In Section 21, Knox Township, Jefferson County, S. H. Boyce & Co. completed in the Berea grit No. 14 on the W. L. Groves & Co. farm. It is good for 6 bbls. a day. In Section 21, same township, the same parties have completed in the same formation No. 25 on the W. L. Groves farm and is an 8-bbl. pumper.

In Section 12, Newport Township, Washington County, Burton Vanwey and others have completed a test on the John Vaney farm. It is a duster in the Mitchell sand, located 2,000 feet east of the Citizens Bank's No. 13, on the A. A. Hollande farm.

Tuscarawas County

In the northwest quarter of Section 35, Mill Township, Tuscarawas County, the Stillwater Oil & Gas Co. has completed No. 6 on the Frank A. Morrison farm. It is a 2-bbl. pumper in the Berea grit. In the southeast quarter of Section 15, Columbia Township, Lorain County,

the Ohio Fuel Supply Co. has completed a test on the F. G. Howard farm. It is a gasser in the Clinton sand good for 500,000 feet.

In the northeast quarter of Lot 32, Stormasville Township, Cuyahoga County, the Ohio Public Service Co. has completed a second test on the R. S. Ashley farm. It is a gasser good for 400,000 feet and later will be drilled deeper.

In the southwest quarter of Section 2, Monroe Township, Coshocton County, the East Ohio Gas Co. has completed in the Clinton sand a test on the C. L. Daylrample farm. It is a duster at a total depth of 3,527 feet. In the same section and county, the Empire Gas & Fuel Co. is drilling a test on the George Snow farm. The same company is due in the Clinton sand at No. 3 on the Robert McKelvey farm. In Mill Creek Township, the Mill Creek Oil Co. has the rig up for No. 8 on the Edward Arnold farm.

In Section 6, Cass Township, Muskingum County, the Trinway Oil & Gas Co. is drilling a test on the J. A. Moore farm. In Section 14, Rush Creek Township, Fairfield County, Shenker Brothers & Co. are drilling a test on the B. F. Whitehill farm. John Alfred is drilling near the top of the Clinton sand at a test on the William Alfred farm. In Springfield Township, Muskingum County, Hunter, Athey & Co. are due in the Clinton sand on the F. M. Ashmore farm. In York Township, Morgan County, the Sun Oil Co.'s test on the W. J. Wentz farm is a duster.

In the southeast quarter of Section 2, Fallsbury Township, Licking County, the Arkansas Fuel Oil Co. has completed No. 3 on the E. C. Howell farm and good for 3 bbls. a day in the Berea grit. In Section 1, Lawrence Township, Washington County, Phillips Bowersok has a 3-bbl. pumper in the Mitchell sand at a test on his own farm.

In Lot 10, Monroe Township, Holmes County, the Empire Gas & Fuel Co.'s test on the M. C. Bird farm is a gasser in the Clinton sand and good for 1,250,000 feet. In Section 18, Sutton Township, Meigs County, the Pure Oil Co.'s test on the T. J. Mitchell farm is an 8-bbl. pumper in the Berea grit. In the same township, and county, the Penna Berea Co. has completed No. 5 on the Hannah M. Capehart farm. It is a 4-bbl. pumper in the same formation.

In Section 2, Monroe Township, Coshocton County, the Ohio Oil Co. has completed in the Clinton sand No. 3 on the Robert McKelvey farm. It is a gasser good for 1,250,000 feet. In the northwest quarter of Section 30, Reading Township, Perry County, Bauman & Co. have a duster in the Clinton sand at a test on the P. Hutchinson farm.

Gasser in Fairfield County

In the southeast quarter of Section 18, Rush Creek Township, Fairfield County, John Alfred and others have a light gasser in the Clinton sand at a test on the W. A. Alfred farm.

In the southeast quarter of Section 20, Westland Township, Guernsey County, Ohio, Davis Brothers Co. drilled No. 3 on the Paul Micha farm into the Niagara lime. It produced 50 bbls. the first 24 hours. In the southeast quarter of Section 15, Jackson Township, Guernsey County, the Ohio Fuel Supply Co. got a 40-bbl. producer when it drilled No. 7 on the W. G. McCourt farm into the same formation. These two wells are the best for the week.

Southwest Pennsylvania

In Center Township, Greene County, the Manufacturers Light & Heat Co. has a gasser in the Gordon sand at a second test on the D. M. Thorp farm. In Springhill Township, the same company has a gasser in the Big Injun sand at a second test on the J. and H. Isoninger farm.

One mile west of Darlington, Beaver County, Mellon & Galey have completed a test on the M. McGowan farm. It is a duster. In Perry Township, Greene County, the Moore-Tex Oil Co.'s test on the John Lemley farm, completed several weeks ago, is producing 50 bbls. a day, flowing by heads.

Pipe Line and Production Taken Over

The Southwest Pennsylvania Pipe Line Co. has taken over and completed making connection to its own lines of the Pittsburgh Pipe Line Co. The oil previously run by the last-named company will in the future be run by the Southwest Pennsylvania Pipe Line Co., amounting to about 3,000 bbls. a month. The Pittsburgh Pipe Line Co.'s line consisted of a gathering line in Allegheny County and in many places paralleled the Southwest lines.

In taking over the line the Southwest made places for as many of the Pittsburgh line's employes as possible. With the taking over of the Pittsburgh Pipe Line's holdings, the last of the so-called independent lines in Allegheny County, but one, went out of business. The reason given for making the transfer is said to have been on account of the production having fallen so low it was no longer profitable to operate the company's lines.

SOUTHWEST WILDCATS

(Continued from Page 62)

Now they are making their plans with little regard to the Edwards lime. It is the Glenrose and other formations deeper down that are the objective and the Rycade's well in Maverick producing gas and some oil from the Trinity and the Magnolia and Smith wells up round Mexia producing in the same formation are partly responsible for drilling deeper. Another thing is the conviction that oil in the Edwards at Luling is an accident and may never be duplicated in another field.

Duval County

Milo E. Trussell, trustee for Trussell, Cezeaux & Putman's No. 1 Moody, NW NE, Survey 60, located 175 feet to west line and 150 feet to north line, is drilling at 600 feet. National Oil Co.'s No. 1 Ball, Survey 16, located 450 feet to north line and 150 feet to east line, is standing at 80 feet.

Hidalgo County

Queen City Oil & Gas Co.'s No. 1 Adams, Lot 1, Block 82, is fishing at 2,155 feet. Dayle L. Smith Oil Co.'s No. 5 Fernandez, Porcion 46, Block 34, located 125 feet to north line and 225 feet to west line, is drilling at 3,100 feet.

Jim Hogg County

Paesano Oil Syndicate's No. 1 Campbell, Las Vivoritas grant, is drilling at 2,830 feet. T. G. Shaw and others' No. 1 Jones, Survey 381, Block 12, located 171 feet to south line and 486 feet to west line, is standing at 950 feet.

Starr County

Kusch Exploration Co.'s No. 1 Frank Doyno and others, Porcion 75, Block 13, is drilling water well. Clark & Woodruff's No. 1 Kelsey, Porcion 76, one-half of Porcion 75, west one-third of Porcion 77, is drilling at 500 feet. J. E. Harston's No. 1 H. Guerra, Survey 43, located 660 feet to south line and 1,320 feet to east line, is standing at 500 feet.

Atascosa County

Lumberman's Oil Co.'s No. 1 Shaw, B. B. B. & C., Block 331, north central, is drilling.

Bastrop County

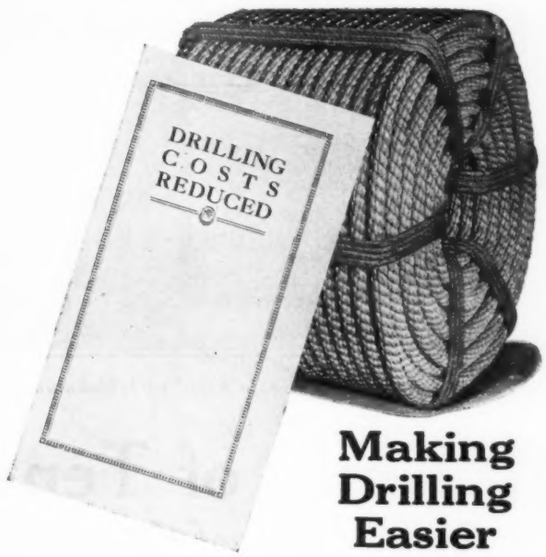
Noack & Laning's (Kelly) No. 1 Roemer, Isaac Casner league, 3 miles northeast of Elgin, is shut down at 1,935 feet. James O'Hara's No. 1 Pritchett, renewing leases and to resume drilling in the old well by middle of January. Young & Owens' No. 1 Ed Jones, 9 miles west of Bastrop is moving in.

Bee County

D. Hewitt's No. 1 Ray, G. A. Ray Survey, west central, is drilling at 2,303 feet; No. 1 Hicks is rigging up. F. Nichols has derrick up for test and moving in machinery 1½ miles south of Normanna. Nichols & White's No. 1 Hicks, Hicks-Ball Survey, Block 19, NW cor., is shut down at 1,408 feet.

Blanco County

C. W. Bates' No. 1 Herman Massey, Henry Manton Survey, 920 feet to north line and 660 feet to east line of survey,



Making Drilling Easier

Every driller should have a copy of our booklet, "Drilling Costs Reduced." This booklet was written by a mechanical engineer, not with any prejudices but only after a thorough personal investigation.

It was not written, nor have we published it to "teach an old dog new tricks." We do know, however, that every single driller will be interested in reading it, and it may give many a new angle of looking at the proper use of a manila cable.

The average driller would surely consider any suggestion for making drilling easier. Columbian Manila Drilling Cable has proven a valuable suggestion to a large number of drillers. It is a high quality product which has earned a reputation for long service and fast drilling.

Use Columbian Oil Well Cordage and be sure to write us for your copy of "Drilling Costs Reduced."

DISTRIBUTED BY
THE NATIONAL SUPPLY COMPANIES

Columbian Rope Company

342-70 Genesee Street

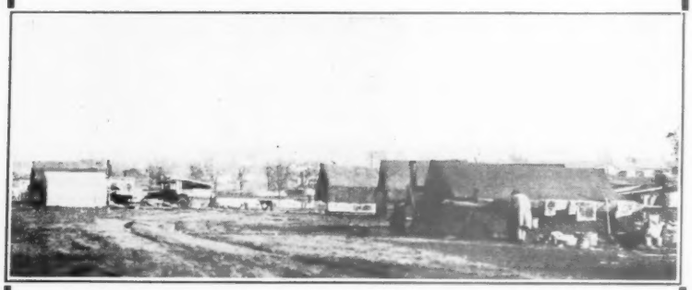
Auburn, *"The Cordage City,"* N. Y.

Branches:
New York Chicago Boston New Orleans

"Drill with Manila"

By Invitation Member
Emblem of BUSINESS CHARACTER
Rice Leaders of the World Association

"If It's Canvas We Make It"



Tents in Famous Seminole Field of Oklahoma.

All Kinds of Tents

for the Oil Fields of the World

All over the world *tents* are solving the oil field housing problem. House your workmen in Baker-Lockwood Special Oil Field Tents. We can supply any kind of canvas housing you want. Complete construction camps, large and small living tents, commissary tents, cook tents, dining tents, stable tents, etc. Flys if desired. Will make to order any size and shape tent you specify.

All of our tents are durable and strong. Constructed to withstand the hardest usage and worst weather conditions. "Built to Stand the Storms." Made regularly of Baker Brand, 29 inch, Government Standard white canvas—or any material desired. Plain or waterproofed. All seams double-stitched—plain or roped tents. Heavily reinforced at all points of strain. Same specifications apply to flys.

Everything in Canvas Goods

DERRICK COVERS - - TRUCK COVERS - - CANVAS COVERS FOR CEMENT - - PAULINS FOR ALL PURPOSES - - COT PADS

Any kind of Canvas Equipment made to order. Write for quotations on your particular needs. Or tell us what you want, and we will figure out your needs and quote prices.

We also have a large stock of single and double-decked Steel Bunks, Cots and Woolen Blankets—at prices that will interest you.

Quick Attention to Rush Orders!

If you want tents or equipment in a hurry, state so on your order. We specialize in speed. Every rush order gets quick attention—both stock and made-to-order goods. Just tell us when you want it. *We'll get it there on time!*

Baker-Lockwood

Mfg. Company, Inc.

Kansas City, Mo.

Makers of Canvas Equipment for Over 58 Years

8247

has derrick up and rig ordered out. Robert A. Rodson's No. 1 Glasscock, Survey 50, has derrick up and rig is on the ground.

Caldwell County

Alexander-Lyles & Adams' No. 1 McConnell (formerly No. 1 Ballard), William Spillars Survey, is spudded in. Detex Oil Co.'s No. 1 Hardeman, 4 miles north of Luling, at 3,075 feet shot and is waiting to clean out. Charley Hirtz' No. 1 Will Parr, is location 3 miles north of Lockport, 2,700 feet east of Austin road. John S. Storey's No. 1 Mrs. Thomson, John Lawrence Survey, 150 feet to south and approximately 600 feet to east line, is location. The Texas Company's No. 1 Robuck, Ben McCulloch Survey, 1,200 feet to southwest lines and 600 feet to southeast lines, has spudded in. Sutton & Smith's No. 1 Carter, Green Hindes Survey, 150 feet to CNL, is shut down at 2,597 feet.

DeWitt County

Empire Southern Oil Co.'s No. 2 Smith, Survey 3 and located three-fourths mile west of No. 1, at 2,960 feet is setting new liner and will try to bring in well. H. T. Roe's No. 1 Lienhard, D. J. Bibb Survey, SW cor., is drilling at 95 feet. Williams & Gates' No. 1 Gohmert, G. W. Brooks league, 175 feet to north line and 300 feet to east line, has been sold and is still standing at 760 feet.

Dimmitt County

Humble Oil & Refining Co.'s No. 1 City National Bank, Survey 654, located 700 feet to north line and 2,000 feet to east line, is at 4,468 feet and waiting on casing.

Edwards County

Devil's River Oil & Gas Co.'s No. 1 Terney, C. C. S. D. & R. N. G. N., Section 167, located 2,640 feet to north line and 660 feet to west line, is drilling in lime at 100 feet.

Frio County

Lain & Brown's No. 1 Edwards, Hooper & Wade Survey, 920 feet to CNL, is standing at 1,250 feet.

Fayette County

National Oil Co.'s No. 1, first reported as E. A. Bainbridge well, is location in Williams Creek section. Williams & Phalon's No. 1 Cervenks, Williams Creek section, has machinery on the ground. E. A. Wliiams & Co. are making location for test southeast of LaGrange.

Goliad County

C. W. Simpson's No. 1 Ideus, W. H. Pendleton Survey, 156 feet to north line and 540 feet to west line, is in hard lime at 2,323 feet with sand at 2,150-64 feet carrying water and gas.

Gonzales County

L. L. Jones and others' No. 1 Campbell, Moore & Bridges Survey, SW cor., is drilling at 1,900 feet after testing sand at 1,733 feet showing water and little gas. L. P. Unkel's No. 3 Johnson, C. H. Jaeger Survey, is replacing steel mast with rotary at 912 feet.

Guadalupe County

F. A. Lain's No. 1 Weinert, W. K. Estell Survey, 150 feet to CNL, is drilling at 3,017 feet.- Eugene Sights' No. 1 Fred Kruger,, Isaac Baker Survey, 450 feet to north line and 450 feet to west line, is shut down at 2,500 feet. H. H. Temple's No. 1 McAllister, Edward Kellett Survey, 450 feet to northeast lines and 1,420 feet to northwest lines, has resumed drilling at 1,940 feet and is down 2,021 feet.

Hays County

J. E. Rodgers' No. 1 Hohenburg, 2½ miles east of San Marcos, is shut down in Trinity at 2,141 feet.

Kerr County

Walker-Van Duyn's No. 1 Barfield, B. B. Peck Survey, 4,700 feet to north line and 450 feet to east line, is drilling at 1,050 feet.

LaSalle County

Sun Oil Co.'s No. 1 Washburn, Survey 157, located 3,500 feet to north line and 3,400 feet to west line, is drilling at 3,170 feet.

Medina Counuty

Pat M. Armstrong's No. 1 Mangold, Survey 62, located 200 feet to south and east lines of southwest 160 acres of the farm, is shut down to replace spudder with rotary. F. Banderet's No. 1 Mofield, Survey 532, located 500 varas to east line and 950 varas to north line, has drilled water well but not yet spudded in oil test. Chacon Oil Co.'s No. 1 Jungman, Survey 31, located 950 feet to west line and 600 feet to south line, is showing little oil at 768 feet; No. 2 Jungman, Survey 31, located 1,500 feet to east line and 500 feet to south line, is at 1,400 feet approximate depth. Medina Oil Co.'s No. 1 Taylor, Survey 135, is shut down at 1,230 feet. Cecil Switzer's No. 1 Zerr, Survey 459, west central, is standing at 3,485 feet.

Live Oak County

Houston Oil Co.'s No. 21 Cartwright, J. M. Colchado Survey, 2,900 feet northeast of No. 18 is drilling at 2,060 feet.

Maverick County

Ryan Consolidated Petroleum Co.'s No. 1 Indio, Survey 14, center, is drilling at 3,415 feet. Rycade Oil Corp.'s No. 1 Chittim, Section 129, Block 7, is shut down at 4,295 feet for water; No. 2 Chittim, Section 158, Block 7, is setting casing at 2,630 feet; No. 2 Sullivan is shut down at 5,445 feet after testing water and is waiting on orders.

McMullen County

Houston Gulf Gas Co.'s No. 1 Lark is spudded in. Nelson & Woods' No. 1 Shiner, Survey 48, Block 74, located 1,000 varas to east line and 350 varas to south line, is standing at 1,750 feet.

Nueces County

Alamo Drilling Co.'s No. 1 Gallagher, 10 miles southwest of Carpus Christi on the old Brownsville road, is moving in.

San Patricio County

Ed. R. Herwick's No. 1 Tsesmelis has spudded in. William F. Morgan and others' No. 1 Welder, 200 feet south of Chillipin Creek and about 2 miles east of Sinton, is preparing to move in. National Oil Co.'s No. 1 J. E. Sullivan, J. C. McMullen Survey, 500 feet to SW cor., at approximate depth of 1,700 feet is shut down to take core as formation is changing after about 800 feet of gumbo. George B. Pickett's No. 1 Garrett is shut down at 3,030 feet; No. 1 Whitworth, NW NW, Survey 60, is drilling at 1,960 feet. John Sigmund's No. 9 Robinson, 350 feet southeast of No. 7, at 2,100 feet is in tough gumbo and will core as soon as it is passed.

Travis County

Roy Clark and others' No. 1 Carl Jacobson, C. Harrison Survey, 500 feet to east line of farm, is drilling at 450 feet. T. P. Garrett's No. 1 Rowe, R. Hornsby Survey, 900 feet to north and east lines, has oil showing at 600 feet on slush pit.

Uvalde County

Pure Oil Co.'s No. 1 J. D. Smythe, Survey 687, located 740 feet to north and 146 feet to east of SE cor. of Survey 20, is drilling in hard shale at 1,260 feet.

Victoria County

J. J. Elam's No. 1 Vol Kutchka, 200 feet to CNL of Section 40, and 2 miles southeast of Inez, is waiting on surface casing at 200 feet. Humble Oil & Refining Co.'s No. 1 Welder, SW cor. of the Welder ranch, is drilling in gumbo at 1,163 feet.

Val Verde County

East Del Rio Oil Co.'s No. 1 Russell, Section 183, is shut down at 3,210 feet. Independent Operator's No. 1 Russell, SE SE, Section 30, Block 4, is shut down at 3,925 feet. Magnolia Petroleum Co.'s No. 1 Whitehead, Survey 81, is shut down at 5,430 feet in black shale due to engine trouble. O. O. Owens and others' No. 1 Henry Mills, Section 128, Block 1, is drilling at 3,820 feet in black lime and shale. W. V. Traves' No. 1 Wilson, Section 115, is shut down at 100 feet.

Zavala County

J. G. Pundt's No. 1 West, Fuentes Survey, NW cor. and east of Uvalde on the Batesville road, is in sand at 1,310-12 feet showing gas and will drill in after Christmas. Western Gas & Fuel Co.'s No. 1 West, northern part of the county, is in basalt at 876 feet topped at 735 feet.

OKLAHOMA FIELDS

(Continued from Page 60)

Walker	4	1,060
Texas:		
Reed	9	4,795
Tidal:		
Grayson	40	1,400
Harjoche	6	2,3.5
Twin States:		
Jones	2	30
Total Bowlegs	291	106,535

Earlsboro

Amerada:		
Anderson	3	1,825
Cowden	8	2,585
Rodgers	3	3,080
Barnsdall:		
Brown	4	2,668
Bruner, F.	2	812
Bruner, N.	4	2,145
Cudjo, C.	1	25
Davis, D.	3	2,251
Davis, J.	4	940
Davis, M.	3	2,670
Davis, W.	7	2,515
Gibson	1	7
Hearn	7	5,262
Ingram	4	175
Pack	4	268
Peter	3	3,511
Sango	1	1,012
Sebolka	2	....
Sullivan, H.	3	71
Sullivan, Harjo	4	1,264
Wasutke		
Carter:		
Davis	1	990
Payne	3	920
Sango	3	6,780
Continental:		
Kays	2	645
Spencer	4	2,040
Crosbie:		
Bryant	2	455
Empire:		
Barker	1	3,477
Edmundson	3	1,690
Gypsy:		
Bruner	4	3,300
Carter	11	6,552
Earl	1	57
Hunick	1	1,375
McFarland	1	....
Noble	4	4,357
Peter	6	170
Sango	4	8,122
State	4	1,500
Independent:		
Bruner	4	475
Sullivan	3	25
Knapp	5	3,374
Gaines	2	2,69
O'Dell	4	80
Inter-Ocean:		
Payne 1	1	....
Magnolia:		
Bryant	6	2,175
Cowden	4	64
Dixon	1	....
Edmundson	3	32
Holmsley	8	2,947
Ingram	1	30
Lena	3	9..
Seay	8	2,865
Simpson	4	384
Sparks	7	3,072
Sullivan	3	84..
Mid-Continent:		
McCumber	7	1,525
Mid-Kansas:		
Anderson	4	445
Phillips:		
Dunnaway	1	30
Graham	7	200
Prairie:		
Baker	1	50
Davis	4	1,260
Graham, C.	2	60
Graham, O.	4	2,700
Stidham	13	7,195
Roxana:		
Bayliss	1	....
Spencer	2	1,820
Shaffer:		
Clark	5	1,355
Sinclair:		
Foreman	1	15
Hollins	3	155
Sango	1	5,770
Skelly:		
Spencer	2	1,696
Texas:		
Anderson	6	1,320
Brown	8	2,045
Rodgers	3	6,095
Wilmont	6	3,155
Tidal:		
Watkins	6	2,555
Twin State:		
Barker	4	27..
Hearn	3	7,445
Total Earlsboro	286	140,991

Seminole

Carter:		
B. Carter	2	200
J. Carter	3	35
F. Carter	3	123
Creamer	2	30
R. Cudjo	4	400
W. Cudjo	2	20
Gilliland	2	335
Grisso, M.	1	....
Grisso, W.	5	1,260
Jackson	1	40
Knapp	3	70
Killing, M.	12	8,400
Killing, G.	4	825
Lokes	7	1,485
Ponder	2	40
Simpson	3	115
Stro.her	4	510
Vierson	3	375
Amerada:		
Fixico	4	1,160
Killing	4	625
Renie	3	699
Atlantic:		
Cudjo, N.	3	512
Barnsdall:		
Carter	8	2,043
Henry	2	725
Jones	4	1,100
Empire:		
Gross	3	162
Wilson	2	396
Gypsy:		
Butler	3	822
Carter	8	705
Cudjo	5	355
Fixico	7	201
Harjo	3	842
Wolf	6	160
Independent:		
P. Fixico	3	270
Harjo	3	400
Independent and Marland:		
T. Fixico	8	643
Independent and Inter-Ocean:		
Jones	4	462
Indian Territory:		
Allen	2	131
Bowlegs	12	2,340
Fleet	1	11
Gooden	4	275
Harjo	4	125
James	4	190
Reed	3	22
Kingwood:		
Johnson	3	1,278
Magnolia:		
Born	1	35
Franks	4	1,020
Mid-Continent:		
Renfe	9	1,150
Tayechi	7	350
Mid-Kansas:		
Wilkins	1	208
Phillips:		
Strothers	2	155
Philmack:		
Butler	3	1,175
Prairie:		
Gross	5	120
Mason	1	95
Spencer	1	15
Strother	8	670
Pure:		
Strother, A.	17	3,226
Strother, B.	5	1,581
Strother, C.	1	10
Roxana:		
Harber	2	284
Lashley	2	35
Sinclair:		
Carter	2	28
Cudjo, A.	6	1,135
Cudjo, B.	4	1,225
Dicey	2	1,385
Fixico	4	535
Slick:		
Cudjo	3	771
Franks	8	1,384
Giblet, Sam	3	2,463
Tiger	1	35
Superior:		
Cudjo	4	842
Texas:		
Mayhue	2	320
Strothers	2	25
Tidal:		
Carter	4	670
Fixico	6	586
Harjo, D.	3	785
Harjo, T.	6	190
Mahardy	2	239
Turman:		
Cudjo	4	1,592
Grisso	1	95
Jones	4	1,128
Total	319	56,484

Searig..t

Carter:		
Davis	7	1,510
Frazier	6	3,910
Kiker	1	30
Mandler	2	40
Scott	1	30
Amerada:		
Johnson	1	95
Strother	2	1,702
Gypsy:		
Cudjo	4	615
Mid-Continent:		
Grayson	6	80
Soloche	3	1,475
Pine:		
Lulla	1	44
Prairie:		
Cannon	1	5
Carter	1	15
Houck	1	5
Kincaid	5	75
Wiemer	1	15
Superior:		
Varnum	1	80
Pure:		
Aldridge	6	3,876
Roxana:		
Strother	3	1,028
Sinclair:		
Polly	4	2,434
Texas:		
Fleet	1	50
Twin State:		
Varnum	2	465
Wilcox:		
Chupco	8	2,844
Total	68	20,423
Total Little River	87	38,154
Total Bowlegs	291	106,535
Total Earlsboro	286	140,991
Total Seminole	319	56,484
Total Searight	68	20,423
Grand total	1,052	362,587

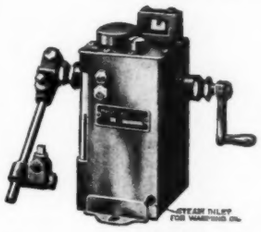
VACUUM OPERATIONS IN FOREIGN FIELDS

The Vacuum Oil Co. did very little field work abroad during 1927. In Australia, the company worked with the government in oil exploration, and the results were reported as negative. The company carried on some drilling operations in Poland, but abandoned them temporarily due to economic factors, which made it more advisable to purchase crude oil for the company's local refinery. Vacuum Oil Co. still holds some extensive leases in the Galician fields.

CHARLES RICHARDS DIES

CHATHAM, Ontario, Dec. 24.—Charles Richards, formerly prominent in the manufacture of oil well tools and equipment at Petrolia, Ontario, died recently at Sarnia, Ontario on his fifty-fifth year.

Lubricate Your Drilling Engines the Right Way



Save your engine cylinders, and reduce your oil and repair bills. Don't use a gallon of oil when you can get better results from half a gallon. If the oil is put into the engine cylinders regularly, a little oil is all that is needed.

The "Manzel" Force Feed Lubricator

Will give your engine the best possible lubrication. It measures out the oil to the engine cylinders just as it is needed—never too much—never too little.

The "Manzel" doesn't require any attention, doesn't need to be turned on or off. It adjusts itself, automatically, to the speed of the engine, starts with the engine, speeds up or slows down with it and stops feeding oil the instant the engine stops.

All you need to do is to put oil in the reservoir and the "Manzel" will do the rest.

That's why thousands of producers are using "Manzel" Lubricators on their drilling engines, steam pumps, air compressors, etc. They know from experience that "Manzel" Lubricators oil their engines the way they should be lubricated and cut their oil bills 30% to 60%.

Let us send you circular and full information.

Manzel Brothers Company

336-338 Babcock St. Buffalo, N. Y.

New Years Greetings

May the New Year bring you happiness and may each day be a golden link drawing you nearer to the realization of your hopes.

The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

TULSA, OKLA.

Compania Cartografica Venezolana

Oil Maps - Blue Printing - Photostats

Up-to-date ownership maps of the Lake Maracaibo District and Eastern Venezuela Oil Fields

25 Broadway
New York City

263 Apartado
Caracas

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

FOR SALE—EQUIPMENT

TWO 85 H.P. Twin Cylinder Watt Miller Direct Connected Vacuum Pumps. Vacuum cylinders 18"x20".
ROTH GASOLINE CORP.
Independence, Kans.

FOR SALE—Electric power plant complete 110 horsepower gas engine, 2,300 volt generator, $2,000, McMillon, Shamrock, Okla.

USED LINE PIPE AND CASING FOR SALE
7—25-Hp. used gas engines.
10—6-in. standard rigs.

15,000 ft. 5½-in. used casing.
15,000 ft. 6⅝-in. used casing.
10,000 ft. 8¼-in. used casing.
5,000 ft. 10-in. used casing.

75,000 ft. 3-in. used line pipe.
50,000 ft. 4-in. used line pipe.
20,000 ft. 6-in. used line pipe.
For immediate shipment from our Texas yards.
KEYSTONE PIPE & SUPPLY CO.
607 Holmes Bldg.,
Fort Worth, Tex.

FOR SALE—EQUIPMENT
5 Dean Triplex Pumps, 5 by 8.
1 No. 2, 1 No. 5, 1 No. 6, 2 No. 7, 1 No. 10, 1 No. 11, 1 No. 12 Sweetland Oil Filters.
Two 10-inch S. Roturbo Centrifugal Pumps. Six 10-inch S. Centrifugal Pumps. Steam Turbine.
Storage Tanks. Send for list.
Send us your inquiries.
We buy your surplus equipment.
CONSOLIDATED PRODUCTS CO
15 Park Row, N. Y. C. Barclay 0603

FOR SALE—Best drilling machine for wildcat purposes with complete compliment of tools, 12½ in. bit down, either gas or gasoline fuel. Box C-160, The Oil and Gas Journal, Tulsa, Okla.

EXTEND your business in the oil industry by advertising in the Classified Wants Section of The Oil and Gas Journal.

FOR SALE—75 and 150 H.P. Boilers. Good condition. Also new Smoke Stack and other Boiler Room equipment. Very reasonable. The Rosedale Milling Company, Kansas City, Kansas.

LARGE USED PIPE MACHINE FOR SALE
Twelve-inch Wieland Pipe Threading and Cutting Off Machine made by Standard Engineering Company, Ellwood City, Pennsylvania. Used not over 30 days.
CENTRAL SUPPLY COMPANY,
Little Rock, Arkansas.

SOMEWHERE, someone in the oil industry needs your used equipment and will pay a good price for it. Sell it with a classified advertisement in these pages.

MOTORS FOR SALE
1 15 HP Westinghouse, 3Ph, 60Cy.
2 15 HP, G E Vertical New 3ph, 60 Cy.
Will pay cash for Motors any condition.
R. R. Roby, Truro, Iowa.

FOR SALE—Tents and camp equipment, new and second hand. Lowest prices. Write us about your needs. Schaefer Tent and Awning Co. Denver, Colo.

FOR SALE—One Bravo belt driven Diamond Core Drilling outfit with necessary equipment and carbon. First class condition; attractive price. Call Mr. Harvey or Mr. Labaugh for particulars at 3-8178 or 414 Mid-Contintnt B'dg., Tulsa, Okla.

BUSINESS OPPORTUNITY

OVER LOADED with mining claims. Some look like future big mines. Fine property for organizing a big Corporation. C. J. Greene, Sells, Ariz.

WANTED Company that is selling to the producing end of the oil industry, that would like to take on an additional line. We can offer a very good proposition. Box C-164, The Oil and Gas Journal, Tulsa, Okla.

CLASSIFIED advertisements in this section do pay well in money and in extended business relations. This has been proven by the continual advertising that we receive from the men in the oil industry, everywhere.

RAISE MONEY
ENLARGE YOUR BUSINESS
New or Old. Do you need capital for Oil, Mining or Manufacturing Development? Outline your proposition in CONFIDENCE, for suggestions. Ask for FREE folder. Tells how to raise money. Small cost. Wire or Write. FAULTLESS SERVICE, Desk 2J, Quincy Bldg., Chicago, Ill.

WANTED CONNECTION, with reliable company, or individual who has acreage to develop, own drilling outfit for cheap drilling, not interested below 2,500 feet, lesser preferred. Interest taken in acreage. Cheap fuel and little water required. No fake schemes indulged in. Box C-161, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE oil jobbing business in small town; doing good business, $3,500. Invoice stock. Truro Oil Co., Truro, Iowa.

WANTED—Lease to drill; Oklahoma or Texas; where drlling will not exceed eight thousand dollars; must be near good production and on good structure. Send map and full details. Address D. Edward Davies, 542 Illinois Bldg., Indianapolis, Ind.

CAPITAL—An experienced, dependable broker with following will aid in financing a worth while project. Address B. W. 810 Broad St., Newark, N. J.

WILL PAY CASH
For gas situations having income $100,000 or more.
P. J. MINCK,
720 So. Kenosha Avenue, Tulsa, Okla.

MR. WILDCATTER

Do you need money to finish or go below contract depth? We may be able to assist you, write stating location and depth of well, kind of rig, amount of acreage, condition of hole, contract depth and all other information possible. Send geological map and report if you have one. Box C-33, The Oil and Gas Jouranl, Tulsa, Okla.

OIL MAN approves Oil Finders. See page 166, The Oil and Gas Journal, Sept. 29, 1927. I use an electric Oil Finder in connection with Geology most successfully and economically. Oil deposits outlined exactly. Address Box C-82, The Oil and Gas Journal, Tulsa, Okla.

THESE classified advertisements bring results.

WANTED—Proposition from parties to drill well for acreage near producing territory in Western Kentucky. All acreage around us leased. Address Box 196, Clay, Kentucky.

CAPITAL—Before offering your securities to brokers, public or salesmen, consult specialized service. Excellent connection. Box 26, 417 Arbuckle Bldg., Brooklyn, N. Y.

POSITION WANTED

ATTORNEY-ACCOUNTANT now employed by drilling and operating company desires connection offering greater future. Good title and contract man, can install and supervise accounting system, thoroughly experienced income tax accountant, also experienced in land department. Box C-165, The Oil and Gas Journal, Tulsa, Okla.

MAN, 43, competent, reliable, sober, will consider offers from active oil company or refinery as purchasing agent or accountant. Can sever present connection upon reasonable notice. Address G. A. D., 1206 Austin, Wichita Falls, Tex.

SALESMAN wants connection with manufacturer of oil well tools or supplies; 14 years' practical field experience; go anywhere. Box 313, Paola, Kans.

HELP WANTED

A SALESMAN

Successful salesman, experience selling power plants, can secure permanent, profitable connection. Acquaintance with industrial buyers desirable. Proven products, backed by a surety bond. Sell to every industrial plant, public institution, hotel and all buildings. 100 per cent cooperation. Personal training given. Give details. Replies confidential. Position available January 1, 1928.

THE NORTH AMERICAN FIBRE PRODUCTS CO.
Cleveland. Ohio

SUPERINTENDENT WANTED for new oil refinery. Applicant must be financially able to purchase interest in company now held by present superintendent. About $5,000 required. Box C-116, The Oil and Gas Journal, Tulsa, Okla.

ADVERTISING RATES

	1 Time	2 Times	3 Times	1 Mo.
3 lines	1.05	1.80	2.55	3.30
4 lines	1.40	2.40	3.40	4.40
5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

(Six words usually make a line.)
Compute white space at the above rates.

Mail your advertisement to
THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

SALESMAN wanted who can handle our line in connection with the product he is now selling.
We sell to the producing end and prefer men who get to the fields. To this party we can offer an attractive proposition. Box C-162, The Oil and Gas Journal, Tulsa, Okla.

CLAUD HARLEN

Telegraph J. A. McAddon at 453 South Spring St., Los Angeles. Very important.

INCORPORATIONS

DELAWARE incorporators. Charters fees small, forms. Charles G. Guyer, 901 Market St., Wilmington, Del.

CHARTERS—Delaware best, quickest, cheapest, most liberal. Free forms. Colonial Charter Co., Wilmington, Del.

MANUFACTURING MACHINISTS

MACHINE WORK — CASTINGS
Machined to your drawings. Gears, Machinery designed and built.
Modern Facilities—Prompt Service. Reasonable prices. Send for our booklet.
GENERAL ENGINEERING AND MFG. CO., ST. LOUIS, MO.

CRAGO CUT GEARS
Worthy of your confidence. General machine work. 1416 Walnut, Kansas City, Mo. Phone Harrison 7660.

RANCHES AND FARM LANDS

BUY FROM THE OWNER
LEASES—RANCHES—ROYALTIES
Thirty years a resident in the Center of West Texas. We know the Ranchmen, and can obtain the Best Prices.
T. L. BENSON,
306 S. Chadbourne St., San Angelo, Tex.

FORECLOSED RANCH of 648 acres near Canon City, Colo., for the amount of the mortgage, $1,600. S. Brown, Florence, Colo.

SAVE TIME and money by using The Oil and Gas Journal classified wants.

328 ACRES 10 miles North of Dallas, Tex. Well improved. Easy terms. For full description Write, W. F. Bowser, 306 So. Chadbourne St., San Angelo, Texas.

OIL 64 GRAVITY

80 PER CENT GASOLINE

We have 2560 acres in San Juan Basin New Mexico with fuel and water on ground. Will give same for 2500 foot well and $2.50 per acre cash bonus. For particulars write Box C-174, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—Irrigated farms and stock ranches of any size anywhere in New Mexico. 100,000 acres carrying mineral rights, fine grass, fenced, running water, a most desirable cattle or sheep ranch. $5.50 acre Noel L. Johnson, Hope, New, Mexico.

IF YOU buy or sell royalties, leases or production you should not overlook The Oil and Gas Journal Classified Wants. They comprise the best medium of exchange available to you.

RIVER PLANTATION — 2,000 acres, small oil well in center of tract, 40 mules, 40 cabins, 3 residences, tractors, implements, model road, big store, $50 per acre. Good terms. W. A. Stephens, Realtor, Post Office Box 555, Shreveport, La.

FOR SALE—Large body of pine timber land on Pacific slope in Mexico, reported will cut 700,000,000 feet merchantable pine, high in turpentine. Write with references to L. Wueste, P. O. Box 183, Eagle Pass, Texas, for price, full report and terms.

PATENT ATTORNEYS

REGISTERED PATENT ATTORNEYS
United States and Canada
Before disclosing your invention to anyone, send for blank form,
Evidence of Conception.
Bulletin "How to Establish Your Rights" and complete information free.
LANCASTER & ALLWINE
240 Ouray Bldg., Washington, D. C.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

LEASES—PRODUCTION

NEW MEXICO oil leases; Lea, Eddy, Chaves, Union, Quay and all other active counties; complete list and map on request. Orcutt-Harris & Co., Colcord Bldg., Oklahoma City, Okla.

SOUTHWEST TEXAS — WINKLER, Loving, Reeves, Ward, Pecos, Culbertson Counties.
Drilling blocks, Leases. Royalties.
Ranches in fee.
H. F. Anthony, Pecos, Tex.

NEW MEXICO—Leases in Lea and Roosevelt; cheap royalties in Roosevelt and Guadalupe; leases in any county; information regarding New Mexico developments. William U. Tate, Franciscan Hotel, Albuquerque, N. M.

WRITE FOR PRICES on leases, royalties, and farm lands on Sweetgrass Arch.
KEVIN-SUNBURST HOLDING CORP.
Box 313, Shelby, Mont.

INVENTORY TIME is here and in checking over your equipment you will no doubt find some that you no longer need. Turn it into cash by disposing of it through The Oil and Gas Journal classified advertisements.

A REAL BET: Owner offers spread 400 acres, in ten 40 acre tracts covering development Eastern edge N. M. from Lea to Union Cos. Price $300. Rental $40 per year. There is no joker here. Leases were bought right and can be sold right. Detail, location and map furnished on request. Address, 609 First Nat'l. Bank Bldg., El Paso, Tex.

FOR SALE—By owner, half section and quarter section lease near Roy Westbrook & Co., drilling well in Randall county. P. O. Box 96, Hempoliax Station, Fort Worth, Texas.

FOR SALE—Oil leases and royalties. Coal County, Oklahoma. Phone 5270.
J. H. LEAVITT,
309 North Harvey, Oklahoma City, Okla.

"IN THE TREND"
Southeastern New Mexico and West Texas counties — Lea, Eddy, Chaves, Gaines Andrews, Winkler, Loving, Ward, Culberson and Pecos Counties, oil and gas leases, royalties and drilling blocks. We buy and sell. F. S. Blackmar, P. O. Box 541, Roswell, N. Mex.

5,000-ACRE solid block, Colorado County, Texas. Good geology. On gas structure. Drilling on four sides now, other tests expected. Lease for bonus or development. 1642 Rice Hotel, Houston, Tex.

5,000 ACRES of gas leases for sale in a proven territory. John F. Hess, Humboldt, Kans.

ECTOR CO. FIELD extended 2 miles by Texas well. $75 buys mineral deed to half of minerals, including oil, gas and potash, on 5 acres, near T. & P. R. R., National Highway and Texas Company lease, less than 3 miles of U. S. Government potash test and 5 miles of all Ector County oil wells, also in line to Winkler Field. Anderson, 709 Linz Bldg., Dallas, Tex.

DURING 1928, sell your leases, royalties and production through The Oil and Gas Journal classified wants.

WILL SELL all or part of 60-acre lease, one-quarter mile from Drilling Wildcat now down 2,250 ft., with several good oil showings now in black lime. Prominent oil interests recently acquired one-half interest in the company's holdings, prepared to drill this test to 3,500 ft. Price $50 per acre. F. T. Lunt, Box 301, Sikeston, Mo.

FOR SALE—Leases, Oil Production, Asphalt, Lime Stone and Other Mineral Lands. W. P. Harley, Bowling Green, Ky.

WANTED—Lease that is not paying you to operate. Will operate on a 50-50 basis. Box C-170 The Oil and Gas Journal, Tulsa, Okla.

WEST TEXAS Leases, drilling blocks and royalties bought and sold. Company and individual land requirements supplied. Cheap leases available now. Small and large buyers solicited. World Oil Co., Land Department, Fort Worth, Tex.

LEASES—PRODUCTION

WINKLER—PECOS COUNTIES
Leases and Royalties
W. S. PATTERSON
Pecos, Texas

LEASES, royalties and drilling blocks bought or sold, West Texas. Wire or write Cope and Fox, 411 San Angelo Nat'l Bank Bldg., San Angelo, Texas.

KEEP YOUR EYES ON SOUTHWEST TEXAS
Since the Pecos oil field has proven to be the largest oil pool in our country, the major oil companies are playing this Section of Texas very heavily. Can furnish 10-year fully paid oil leases in one or more sections, lots jam up against blocks recently purchased by the major oil companies, in Sutton, Edwards or Kimble Counties, from $2 to $3 per acre. R. E. Moore, 214 Dan Waggoner Bldg., Fort Worth, Texas.

WEST TEXAS Fee Lands, Leases, Royalties, Drilling Blocks and Producing Properties. Correspondence solicited from owners or other interested parties. W. T. Doyle Company, 806 Southwestern Life Building, Dallas, Texas.

FOR SALE—Bargains in small leases and royalties near and under most promising well in West Texas. Box 1020, El Paso, Texas.

LAND IN FEE with all mineral rights West Texas oil fields. Two dollars and twenty five cents an acre bonus. Joe Cunningham, Big Springs, Texas.

OIL LEASES and royalties. Ector, Crane, Pecos, Reeves, Ward, Upton and Winkler Counties; buy or sell. C. H. C. Anderson, 712 Linz Bldg., Dallas, Tex.

ROYALTIES—PRODUCTION

RUMPH & ORR
Real Estate and Oil Royalties
Camden, Arkansas.
References: Any bank in Camden.

INVENTORY TIME is here and in checking over your equipment you will no doubt find some that you no longer need. Turn it into cash by disposing of it through The Oil and Gas Journal classified advertisements.

WEST TEXAS ROYALTIES FOR SALE
Of prime consideration is the geological work accompanying each sale.
J. F. MARION OIL COMPANY
1213 Magnolia Bldg., Dallas, Texas.

BUYING WEST TEXAS and New Mexico royalties direct from owners in large and small tracts require outlet for some excellent bargains. McAnally & Company, Box 1127, Abilene, Texas.

GAS LOUISIANA OIL
MONROE RICHLAND
Country's greatest Gas Development now under way these fields. Royalties, Leases, Fee for sale on Producing, Proven and Edge stuff. Licensed Broker. Want connections, Eastern Cities.
CHAS. G. BENNETT,
Box 1032, Monroe, La.

SOMEWHERE, someone in the oil industry needs your used equipment and will pay a good price for it. Sell it with a classified advertisement in these pages.

PLAY THE ROXANO-LLANO TERRITORY
Several choice royalties for sale around the Roxano-Llano well in Northern Winkler County. Also other royalties. David Daniels, Box 341, Corsicana, Tex.

ROYALTIES—PRODUCTION

ROYALTY & LEASE BARGAINS—Lea County, New Mexico. Winkler & Pecos County, Texas. $1 per acre. List, Maps. Harry Haynes, Grantville, Kas.

THESE classified advertisements bring results.

HAVE $50,000 cash for good producing royalties preferably Oklahoma, Kansas and Louisiana; settled or semi-settled. Give full particulars. Address Box C-190, The Oil and Gas Journal, Tulsa, Okla.

MONEY RAISING

FINANCE YOUR OWN project with shares bonded. Quickest, most satisfactory known method of raising capital. Information free. Bankers Interstate Security, Electric Bldg., Denver, Colo.

SAVE TIME and money by using The Oil and Gas Journal classified wants.

DO YOU NEED MONEY for organizing or financing oil or mining deals? Write 136 E. 13th, Oklahoma City, Okla.

CAPITAL RAISED!
Thru sale of securities in your corporation. Worthy enterprises only. Over twenty-five years experience. Highest references.
NORTHCLIFFE
25 West Forty-third, New York.

If you wish to buy or sell Leases or Production, use the Classified Section

OIL LEASES and royalties, Ector, Crane, Pecos, Reeves, Ward, Upton and Winkler Counties; buy or sell. C. H. C. Anderson, 712 Linz Bldg., Dallas, Tex.

DRILLING BLOCK secured on approved acreage and well supervised; no bonus; we keep some acreage as fee. Nicolle, Petroleum Geologists and Operators, Box 1720, Fort Worth, Tex.

FOR SALE—Leases and production in Warren, Allen and Barren Counties. Have leases in Barren County joining producing leases and some within half-mile to 1 mile of production. W. P. Harley, Bowling Green, Ky.

SOUTHWEST TEXAS — WINKLER, Loving, Reeves, Ward, Pecos, Culberson Counties.
Drilling blocks. Leases. Royalties.
Ranches in fee.
H. F. Anthony, Pecos, Tex.

J. F. MARION OIL COMPANY
Magnolia Building
Dallas, Texas
Buys and sells Texas Oil Leases and Royalties.

The Oil and Gas Journal Classified Ads bring buyer and seller together.

ADVERTISING RATES

	1 Time	2 Times	3 Times	1 Mo.
3 lines	1.05	1.80	2.55	3.30
4 lines	1.40	2.40	3.40	4.40
5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

(Six words usually make a line.)
Compute white space at the above rates.

Mail your advertisement to
THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

OIL INDUSTRY PRINTING

CONSUMERS' LEDGERS
We are prepared to furnish from stock standard forms of gas meter Consumers' Ledgers. Sample forms and quotations on request. First-class material and workmanship.
DERRICK PUBLISHING CO.
Oil City, Pa.

DURING 1928, sell your leases, royalties and production through The Oil and Gas Journal classified wants.

NEW CATALOGUE OUT NOW
Oil Field Legal Blanks
Leases, assignments, releases, township books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

EQUIPMENT WANTED

WANTED Nat'l. Machine No. 1 or Star 25 or 26. Give best price, list of tools. Must be in good condition. Bert Thompson, Pellville, Ky.

Chicago Market Waits Developments

Refiners and Marketers Not Quoting Prices for More Than Brief Periods. Small Stocks of Gasoline Reported

By J. B. Waldo

CHICAGO, Dec. 26.—Last week was a short week in the local industry. All the week was given over in some degree to the holiday and after Thursday there was very little effort made to do business except the regular routine. Several of the oil offices closed all day Saturday instead of the regular half day and Monday was observed as the legal holiday by all the offices. There was very little activity at least in the way of new orders. There is a very distinct desire manifested by all in the market to wait for developments. Business is confined to the immediate needs of the buyer. On the other hand the refiners and marketers do not willingly quote for future business for more than brief periods. The refiners hope for larger buying and higher prices after the new year has made a fair start and the buyers of all petroleum products are unwilling to purchase ahead except on the basis of the present market.

There is little disagreement expressed regarding small stocks of gasoline and other supplies in the dealers' tanks. The supplies of fuel oil held by many industries are known to be too small for them to resume operations on a large scale after the annual holidays and inventory period without filling their storage. One large manufacturing concern south of the city has sent notices to its employes asking them to report for work after January 1. The buyer for this concern recently refused to place a small order for fuel oil, saying that his superiors would not stand for it and at the same time admitting the first thing when the plant did resume operations would be for him to place a rush order for a couple of cars to start the plant. Other concerns are believed to be in much the same position. Jobbers of gasoline have been fully as careful not to accumulate any excess stocks. One of the annoying incidents to the business during the past two weeks has been the number of requests received from all classes of buyers to defer deliveries of material.

Stocks and Demand

Just how large the gasoline demand will be depends a good deal on weather conditions. Last week witnessed some fairly low temperatures over the territory and it increased the demand for fuel oils but had a deterring influence on motor fuels. Deep snows were quite the rule in some parts of the territory, especially in the Northwest. Indiana had some deep snows in parts. It was not a general conditions and this city and parts of the territory have yet to experience their first snowfall of the season. Where the roads were open the consumption of gasoline was very fair for the season. Most of the dealers who enjoyed this good business were receiving the bulk of their supplies on contracts. Where the demand was light they usually asked that shipments be deferred after they had received all that they could possibly store. It is with such dealers that stocks are fairly ample.

Where supplies are bought in the spot market or the weather and road conditions have permitted a more general use of the autos stocks are light and generally the careful buying of all dealers has kept the stocks in dealers' hands in a rather low position. They are still permitting the refiner to carry the stocks. Some of the distributors have purchased moderate quantities in anticipation of their wants but generally there has been no speculation in gasoline in the shape of buyng at the present market for future needs. Undoubtedly the method of allowing the manufacturer or wholesale distributor in all lines to carry the stocks has increased during the year.

There is a very general complaint that retail distributors buy in small quantities and replenish their stocks at correspondingly frequent periods. There are many advantages to the retailer in this plan and they are not likely to change it. In most lines of merchandise prices are made for a season and vary but little but gasoline prices have been subject to more rapid and frequent changes and it is not impossible that should a better buying spirit develop after the inventories are taken a firmer market and somewhat higher prices may be secured by refiners. It is yet too early to notice any particular trend in this direction. Good weather for motoring such as we have had over a great part of the territory would help by increasing the consumption.

Spot Market Slow

The gasoline market last week was devoid of any distinctive features. Business was slow in the spot market and from the snow-bound parts of the territory there was some holding back of shipping instructions and in some cases where regular deliveries were called for by the purchase order, the dealers have asked that shipments be deferred on account of the heavy snows in their sections which made it almost impossible for them to go to their customers or for motorists to use their cars. North of a line drawn west from Green Bay, Wis., and down to some parts of northern Iowa the snowfall has been deep and returning travelers say the only cars running between towns are the freight trucks and buses.

Prices showed practically no change. Some of the leading refining offices dropped their price of 5¾ cents for the U. S. Motor grade. Managers stated that the spot demand was not large even at the low price and they had to make this price to meet competition from other refiners. On the other hand several refiners have refused to budge and are holding at 6⅛ cents and in one case at 6¼ cents and are not allowed to sell for less under any circumstances. With these refiners their stocks have been kept at a fairly low level by their own distribution which for the most part is fortunately located in territories where the weather conditions have been favorable to a good consumption for the time of the year. In fact, some of the stations are doing as good a business as they did in October which was a good month for gasoline consumption.

Local managers do complain that the higher prices quoted on U. S. Motor gasoline handicaps them in the sale of other gasolines, for when they quote 6⅛ cents on U. S. Motors buyers lose interest in the rest of the line. One company is really at the bottom of the market on its higher gravities and low on distillates yet it is difficult to do business on these with high prices, as compared with the quotations made by other refiners, on the U. S. Motor grade.

Antiknock Sales

The antiknock gasolines are still moving steadily and new products in this line are reported. They are not all exactly of recent development but are just being generally offered on the market here. The H. H. Cross Co. is turning out at its Smackover plant a grade of which good reports are made by some leading distributors who have tried it. It has a low initial and a very efficient benzol equivalent. The Sims company is also offering antiknock gasoline. There can be no doubt that sales of this product are large and are increasing. It may be just a temporary demand due to wide publicity as some of the oil men still claim, but if one is talking to a country or city jobber and is at loss for an interesting topic it is only necessary to say, antiknock gasoline to secure immediate and complete attention. The dealers are interested and it is because the motorists want the product. It has been on the market long enough to prove that while some of the makes are less efficient than others, at least in antiknock quality, that there is a continuing demand from users. While some of the distributors still claim that a good 64-66 375 endpoint gasoline has all the merit of any antiknock gasoline, according to their own tests, still many dealers admit that the antiknock gasoline has desirable qualities of its own and practically all that the antiknock idea has gone over big with the motorist.

Higher Gravities

There was no change in the higher gravities as to price and the demand was good, especially as compared with the Motor grade. Prices were held with considerable firmness. Natural gasoline was moving slowly here, the chief demand being for the A and AA grades but all grades showed a material decline for the week. The situation in the eastern parts of the territory and over in Ohio showed no change for the better. The city of Detroit bought 1,000,000 gallons on Tuesday of last week at a price stated to be 5.35 cents and prices have been made from some of the nearby refiners that figure close to 5¼ cents, Group 3. The same price is quoted from Cincinnati by dealers there. It would seem that Ohio and some parts of Michigan, especially the district around Detroit, are no longer sales territory for deliveries from the Group as the net to the refiner at the delivered cost to the buyer is really too low to be considered except for distress shipments. The Standard Oil Co. of Ohio is now selling ethyl gasoline through its stations and bulk plants.

Kerosene Dull

Kerosene has been dull and prices rather easy though no change has been made in the usual quotation to the trade. Here and there a sales office reports some quantity business but as a rule the actual orders have been confined to occasional cars from regular customers. The limited number of refiners who run the 42-44 gravity report that their sales on this grade have been nearly as good as on the 41-43 but those who do not claim they lose no business of consequence because of the fact they do not have the product to offer.

Distillates Moving

Distillates have moved well on contracts and there has been a fair amount of new orders. There continued to be a good deal of comment on the way in which gas oil is outselling the distillate. Some of the refiners are asking an eighth of a cent more for their distillate but for the most part prices are unchanged. At the close of last week there was a better spot demand for distillates and encouraging feaures were seen in the situation. The total of new spot business could hardly be called large but early shipments were desired and orders placed without much trouble regarding prices. Some of the refiners and marketers were still selling 38-40 straw at 3¼ cents, but others, and they were doing as well as anybody in securing the orders, were firm at 3⅜ cents. The offerings were fairly liberal of this grade although there was less of the 36-38 grade wanted due probably to the fact that a good gas oil was a little less expensive to buy owing to the lower freight even at the same price at the refinery.

Zero Gas Oils

The zero gas oils continue in strong demand. There is according to several sellers less insistence on the color than has been the case and many buyers are ready to waive the straw specification when the difference in the price is realized. As all oil men know, the demand from consumers for a light color in their furnace oil is really a matter of prejudice and is not based on real difference in merit between the straw and the amber gas oils. This prejudice can be overcome. One fact in regard to domestic oil burners was brought home rather closely when an experienced oil man confessed that he turned out his burner at nights because he was afraid of what might happen. If a man in the business accustomed to handling much more explosive products than furnace oil was rather timid regarding his own oil burner those who knew nothing of the hazards of using oil can be excused if they ask for and insist on having as a fuel an oil that they believe to be safer because it is cleaner.

The price of the zero straw gas oil is as high today as that for a good straw distillate and several shippers have been forced to deliver straw distillate in place of straw gas oil. In fact there is so little of the straw gas oil that it may be that some of the improvement noted in the demand for straw distillate is due to its substitution for gas oil. It is to be hoped that the freight bills state the truth as the railroads are watching shipments rather closely and some shippers have been called to account for incorrect billing of petroleum products recently. The Shreveport refiners who have been a chief source of supply for straw gas oil have been holding for 3⅛ to 3¼ cents and are well sold up, they state. Some blended oil is offered but distributors here are doing their own blending and some are so efficient they state they can produce by blending any wanted furnace oil.

Price Firm

With the refiners holding for a 3-cent price or better the market here is firmly held at an average of 3¼ cents with an upward tendency. There is a good deal of difference in gas oils from different refineries and from different crudes and some that is not quite as desirable as others might be had at 3⅛ cents. The dark zero oils have sold very freely and prices are firm, The best grades are held at 3 cents with a possible low price of 2¾ cents for some oils. One refiner reports he has advanced his amber gas oil to 3 cents and is well sold ahead. A month ago he had a large accumulation due to the failure of his contract customers to take out their full quantities and he was selling his surplus at that time at 2¾ cents and some for resale went at 2⅝ cents. This condition seems to be typical of conditions with refiners.

Occasionally one hears of some oil offered at slightly lower prices but today zero oils are wanted and are firm in price and many expect that with the colder weather which usually follows the winter soltice December 22, there may be some advance in prices although no runaway market seems possible under present conditions. The industrial demand is not active from either manufacturing plants or gas companies. The latter have supplies on which they draw. Some who buy from month to month have placed their January orders but will be back again early next month for February deliveries. Some of the purchasing agents have intimated their willingness to place larger orders if the prices

(Continued on Page 231)

More Optimistic in Eastern Market

Actual Developments Not Encouraging. Feeling Crude Situation Is Improving. Refined Market Little Better

By N. O. Fanning
New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Dec. 24.—While a more optimistic feeling prevailed in the eastern refined oil markets during the past week, actual developments were not encouraging. There is a strong feeling that the crude oil situation is getting better; on the other hand, competitive conditions in the East are as bad as ever, judging by prices. It is true gasoline is a shade firmer, but the market has not improved sufficiently to warrant more than a mild degree of satisfaction among the members of the trade.

It is no secret that industrial conditions are not up to expectations and that the motor trade is not establishing the usual records to which many have become accustomed. The result is perceptible in the demand for gasoline, especially in bulk sales.

The oil trade as a whole is now turning from the factor of demand to that of supply in an effort to see through the clouds. While no tremendous increase in consumption can be expected until spring, there is always the hope that the production of crude oil will make an about-face, so far from realization as that event now seems.

Gasoline Higher

Practically all 8¼-cent motor gasoline has disappeared and refiners are now quoting at not less than 8¼, as against 8⅛-8¼ a week ago. This improvement is looked upon as transitory, however. Consumption has fallen off a little, but it appears that refiners' and jobbers' stocks are less topheavy, and there is not so much of a disposition to force distress material on the market.

Whether what improvement there is is due to the usual year-end wave of optimism or not, it is hard to say. It seems too late now, however, for prices to improve before January 1 enough to allow of any good show in inventories. In oil circles they are now looking ahead to next year and taking the present situation in its stride.

Receipts Decline

During the past two weeks there has been a noticeable letup in receipts of gasoline from the Southwest both by tank car and tanker, which has relieved the supply situation somewhat. While the supply of oil coming in has been heavy, a larger part of it is composed of fuel oil and heavy crude which does not add so much to the supply of motor fuel.

There is a disposition on the part of southwestern refiners to hold on to their gasoline rather than force it on the eastern markets at present low prices, according to some trade authorities. They figure that there is a better possibility of getting a favorable price in the spring than at present, and spring is not so far off that they cannot afford to wait until then. This applies to the larger companies in good financial condition.

The service station situation in the East is in particularly bad condition. One large chain of stations is selling gasoline at 12 cents a gallon, retail, and doing plenty of business at that figure, it is reported. Prices at stations continue irregular. There is a growing degree of mortality among service stations and garages in the East, according to the daily reports of bankruptcies. This not only hurts the retail trade but also the jobbers and refiners. It has long been realized, however, that the retail end of the gasoline trade has been largely overemphasized, and that sooner or later there will have to be a considerable amount of elimination.

Kerosene Firm

The continued firmness in the kerosene market is due largely to the increased demand for furnace oil at home and substantial shipments of kerosene abroad. It also appears that many refiners are only mildly interested in the market and are not disposed to force distress kerosene on the market even though they may have more than they want.

Water white kerosene at Atlantic Coast refineries is not available for less than 7½ cents in tank car lots. This price has ruled for several months, and during that period is not believed to have been shaded. There is every indication that with the real winter season just coming on, the price may go somewhat higher.

Prime white kerosene is scarce probably due in part to the fact that the prime white cut is going into furnace oil to a great extent. The result of the scarcity of prime white is that consumers are beginning to get used to the water white and are demanding it more and more. The result is that the one grade is becoming standard as opposed to two or three grades formerly popular in the trade. This applies only to the domestic market.

Furnace Oil

Furnace oil is moving on a larger scale with the arrival of real cold weather. Conditions in the northern part of New York State and New England have been favorable for some time, but in southern New York and New Jersey the weather has been so warm as to hold back the use of oil in burners to a considerable degree.

Gas and Fuel Oil

The gas oil market is firm at 5½ cents in tank cars. There is little special feature to the trade except the disposition of refiners to conserve their supplies. No distress gas oil is apparent.

Diesel oil is moving satisfactorily and the price of $2.10 a barrel at New York harbor is not being shaded, so far as can be learned. The growing importance of Diesel oil is being testified to daily by statements of leading authorities.

The current issue of Pacific Coast Shipping says: "While the failure of other world trades to absorb their accustomed tonnage this fall must be regarded as essential to the understanding of the Pacific Coast market, there is still another highly important factor of an equally general character. This is the more commanding position which the motorship has assumed in world commerce.

Motorship Market

"We are passing through a period of elimination of obsolete and semiobsolete tonnage, the typical old slow 'tramp' freighter of a speed of nine or ten knots, the coal-burners and such craft which cannot compete on an operating basis with the more economical motorship.

"This is well exemplified by the large amount of new motor tonnage constructed and under construction, particularly when it is borne in mind that the owners are building these bottoms in the face of generally depressed freight rates. The apparent answer is that these revenues are not too low for the motorships.

"Since the existing rates are not profitable for less efficient tonnage, there is a well defined tendency to substitute motor for steam tonnage in all branches of the trade, charter as well as liner. This evolution, incidentally, is the one important factor holding against an improvement in rates next year."

The Hamburg American Line, when its building program is completed, will have some 30 Diesel driven vessels aggregating 200,000 tons gross. The line recently placed an order with the Vulcan yard at Bremen for a 10,000-ton passenger motorship to have a speed of 15 knots and accommodations for 1,000 passengers and 9,000 tons of cargo. This vessel is intended for the South American emigrant trade, but it is believed the company intends to make the design the basis of a general class to be operated in the various services

With the completion of the four motorships for which orders have been placed by the Wilhelmsen Line, of Oslo, this line, it is stated, will possess what is believed to be the largest fleet of motorships in the world. The first vessel of this description was placed in service by the line in 1921. At present the line has a total of 22 motor cargo vessels in operation with an aggregate deadweight tonnage of about 200,000, which will be brought up to about 250,000 tons dead weight by the completion of the four vessels mentioned and two others under construction. The four just ordered will be of 9,500 tons dead weight and a loaded speed of a little more than 14 knots.

Bunker Market

The bunker fuel oil market is unchanged, with no indication of improvement. There have been particularly heavy arrivals during the past two weeks of Venezuelan fuel oil. Bunker fuel oil is now available for vessels at $1.35 a barrel at New York and Baltimore, not including lighterage charge of 6½ cents a barrel.

Lubricating Oils

The lubricating oil market is mixed, with some lines dull and others only fairly active. Cylinder stocks are not moving well, and are being shaded. Considerable Pennsylvania cylinder oil is said to be available in this vicinity at as low as 10 cents a gallon. Local refiners are holding on to their stock, however, and buying some additional, largely for export purposes.

Spindle oils and black oils are reported to be extremely dull. Red and pale paraffin oils are more active, but prices have not displayed any improvement, with 25 pale quoted at 12 cents in bulk, and 28 pale at 7¼. Red paraffin oils continue to range in price from 9¼ cents for 200 viscosity to 11½ cents for 285 viscosity.

Paraffin Wax

Paraffin wax is fairly active and unchanged in price. Liberal export purchases of crude scale and refined have helped the domestic situation materially, and indications are that the market is now on solid ground. Refined wax at New York continues to be available from 3⅞ to 5½ cents a pound.

The Christmas trade has also been satisfactory and has helped the higher melting points particularly, but refiners are hoping to maintain business on a good scale after the holidays.

Petrolatum

Petrolatums are active and firm. Cream, snow white and lily white changed hands on a liberal scale at 6¼, 8 and 9 cents a pound in carload lots. Dark green was dull, and unchanged at 1⅞ cents a pound, while amber and extra amber were reported scarce at 3⅜ and 3¾. Refiners were disposed to hold out for a fraction higher on these grades.

The Export Market

The oil export volume at New York is holding up well as a whole, and paraffin wax is particularly active. For the week ended December 21 the manifests show 3,237,125 pounds of crude scale and 387,200 pounds of refined wax shipped abroad. The week before that exports amounted to 607,860 pounds of refined and 1,394,600 of crude, and two weeks before there were exported 3,014,220 pounds of refined wax and 542,630 pounds of crude scale.

Unfortunately the heavy delivery of wax has not helped prices any, but a continuation of this rate of business is bound to have a stimulating effect. Shelves of European consumers are very low at present, and they are evidently taking advantage of the current reduced prices to stock up.

The demand for bulk gasoline and kerosene is steady, but there is no startling amount of business. The cased oil situation is much better as a result of Far East and South American orders. Cased kerosene, especially, is in demand.

The demand for lubricants for export is rather slow just now, but exporters look for a steady improvement after the first of the year. It is no longer a secret that Europe is getting on its feet industrially, and this is going to help the bulk lubricant trade. American manufacturers practically have the European market tied up because of our large supply of high-grade oils and advanced refining methods.

Petroleum asphalt exports have fallen off considerably of late. This is attributed to seasonal conditions. Foreign marketers laid in heavy supplies during the spring, summer and early fall in anticipation of large roadbuilding requirements, which have materialized. Australia, New Zealand, Great Britain were the leading buyers and they can be expected to come into the market next year on a similar scale.

The following table shows principal exports of petroleum and petroleum products from New York during the last three weeks; all figures in gallons unless otherwise noted):

Gasoline:	Dec. 21	Dec. 14	Dec. 7
Bulk	1,922,579	12,825,939	4,940,494
Cases	1,525,980	242,690	282,100
Kerosene:			
Bulk	662,494	2,965,771	3,945,270
Cases	2,494,620	1,312,000	1,045,940
Lubricating oil:			
Bulk	.....	447,972	4,981,445
Barrels	943,700	394,900	1,203,950
Cases	100,050	67,230	11,510
Lubricating grease:			
Barrels (lbs.)	102,600	.....	281,250
Paraffin wax:			
Bags (lbs.)	387,200	607,860	3,014,220
Barrels (lbs.)	3,237,125	1,394,600	542,630
Petroleum asphalt:			
Barrels (tons)	268	.....	.....

The foregoing figures include all shipments of 500 bbls., 1,000 cases, or over.

Tanker Market and Movement

The oil tanker charter market was inactive during the past week. Rates continue at the lowest levels, with 55 cents a barrel being accepted for a clean vessel from California to New York, as against more than $1 a barrel paid a year ago.

New fixtures include the following:

Tanker Stelvio, Gulf to United Kingdom-Continent, January-February loading, 16s 6d.

Tanker William Green, Gulf to north of Hatteras, gas oil, January loading, 19 cents.

Tanker Tiverton, Gulf to Rouen, January-February loading, lubricating oil, 21s 6d.

Tanker Beaconoil, Cartagena to Continent, crude oil, January loading, 16s.

Tanker Sunoil, California to north of Hatteras, January loading, clean, 55 cents one port, 56 cents two ports.

Tanker Radiolene, 4,000 tons lubricating oil, Gulf to United Kingdom-Continent, January loading, 23s.

Receipts at Atlantic Ports

Receipts of crude and refined oil at Atlantic Coast ports for the week ended December 21 are estimated at 3,803,000 bbls., a daily average of 544,000 bbls.

(Continued on Page 231)

Mid-Continent As Refining Center

Holding Its Own in Production of Refined Products, Although Number of Operating Plants Is Decreasing

By C. O. Willson

The Mid-Continent area, despite a marked decrease in the number of operating plants, is holding its own in the refining industry of the United States. The area, which includes Kansas, Oklahoma, North and Central Texas, North Louisiana and Arkansas, according to the December report of The Oil and Gas Journal, had less than 100 refineries in operation for the first time in several years.

The December report showed 99 plants were actually operating on the first day of the month. This number was divided as follows: Oklahoma, 41; North and Central Texas, 31; Kansas, 16; north Louisiana, 4, and Arkansas, 7. This number compares with a total of 127 in operation in December, 1924. At that time 52 plants were operating in Oklahoma, 40 in North and Central Texas, 21 in Kansas, 6 in north Louisiana and 8 in Arkansas.

The list of 28 refineries which have been shut down during the past three years for the most part is confined to small skimming plants. There have been no important failures such as characterized the Mid-Continent operations from 1920 to 1924. In several cases the plants have been shut down by owners with the expectation that later when market conditions become more favorable, that operations will be resumed. In a few cases the shutdowns are permanent. This applies particularly to the small local plants which flourished during a period when the present keen competition in marketing and the demand for maximum efficiency in refining did not exist.

Fewer and Larger

This competitive situation in regard to marketing and the changes in manufacturing operations which has added to the capital outlay in refineries is largely responsible for the general trend in the Mid-Continent area—for many years the home of the small refiner—toward fewer and larger organizations. Including the small skimming plants there have been approximately 250 refineries built in the Mid-Continent area since it became a major source of crude oil supplies. During the war and up until 1920 many of these refinery organizations prospered because regardless of their method of operation they always seemed to be able to dispose of their products profitably. There were many failures even in those days but capital was always available for new enterprises or for the rehabilitation of the old.

Since 1920 there has been a rapid elimination of the weaker units until now the bulk of the Mid-Continent refining is in the hands of strong independent units which are engaged in all branches of the oil industry. These major units being engaged in the producing and marketing branches naturally are less dependent on their refineries for profitable operation. Those who have watched developments in the Mid Continent over a long period of time believe that there will be additional eliminations. In some cases, however, the plants will simply be relocated at points which are considered more strategic from the standpoint of transportation facilities to the consuming markets.

Mid-Continent Position

As shown in the accompanying table the expansion of the larger refinery organizations has more than offset the losses due to the shut down of the smaller plants. Comparing the operations for the 10 months of this year (latest available reports of the Bureau of Mines) with the operations of the three previous years and it will be seen that the Mid-Continent is maintaining its position much better than was predicted by many a few years ago. The following table shows the percentage of the total gasoline and other products produced in the Mid-Continent:

	Crude Oil Run to Stills Per Cent	Gasoline Per Cent	Kerosene Per Cent	Fuel-Gas Oil Per Cent	Lubricating Oil Per Cent	Wax Per Cent
1927 (10 months)	19.1	22.8	21.8	16.5	8.5	8.8
1926	19.4	23	19.7	17.4	8.7	8.3
1925	20.2	24.8	20.3	17.6	9.9	9
1924	21.2	23.1	19.2	17.4	9.8	10.8

This table shows that the Mid-Continent is still refining approximately one-fifth of all the crude oil run to stills at refineries in the United States. From this crude oil it is producing a still greater percentage of the gasoline and kerosene reflecting the fact that the Mid-Continent refiners largely center their operations on the production of the light end products. On the whole they have the best type of crude oil for this method of operation and they have also installed equipment with the view of securing the greatest possible recovery of the lighter products.

The general installation of cracking equipment has tended to strengthen the Mid-Continent's position as a refiner of gasoline but the same development accounts in part for the fact that the percentage of fuel oil and gas oil is less. In the lub oil and wax ends the Mid-Continent refiners have not made any general effort to increase their output so that the percentage trend in these products is downward.

Large Coke Production

In the production of petroleum coke the Mid-Continent has rapidly increased its output. In 1924, the refiners in that area produced 8.5 per cent of the total for the entire United States, 12.2 in 1925, 19.6 per cent in 1926 and 25.2 per cent the first 10 months of this year. This growth is also entirely due to the spread in cracking facilities. Although a majority of these cracking units secure commercial grade of fuel oil as the residuum from their operations, those with the nonresiduum operation are producing large quantities of coke. The petroleum asphalt production increased from 1,200 tons in 1924 to 28,800 tons in 1926 and 21,800 tons the first 10 months of this year. This increase comes from the Arkansas and north Louisiana areas, where the asphaltic base crudes have furnished an excellent supply of raw material for the production of petroleum asphalt. The amount refined in the Mid-Continent is still less than 1 per cent of the total for the entire United States.

Crude Situation

In Table 1 it will be noted that the crude runs to stills of Mid-Continent refineries this year have averaged 20,000 bbls more daily than during 1926. This checks very closely with The Oil and Gas Journal's monthly report which appears several weeks earlier. The Government's report generally shows a slightly greater total for crude oil run to stills due to the fact that it includes the San Antonio group of refiners in the Mid-Continent.

There has been very little change in refinery crude runs to stills in the older refining areas. The increase can be accounted for by the new 12,000-bbl. refinery of the Humble Oil & Refining Co. in West Texas and small increases at several plants in Oklahoma. In this connection, the Seminole Field of Oklahoma has played an important part in Mid-Continent refinery operations this year. The first nine months of 1926 previous to the time that the Seminole area was definitely proved to be a major producing field, many refiners were faced with a serious shortage of crude oil for their refinery operations. This was particularly true in Oklahoma.

Competition between the Mid-Continent refiners and the pipe line purchasing companies which buy for refineries located at distant points was keen. With no new flush production available, several refiners were compelled to look to the new Panhandle, Texas, area for their crude supplies. If the Seminole Field had not been brought in it is certain that a few refiners at least would have been unable to secure crude sufficient to operate their plants at capacity and additional shutdowns or removals would have been necessary.

The Seminole Field this year has not only furnished the major pipe line companies a large volume of crude oil, but also has been the major source of supply for several of the larger refinery organizations in Oklahoma and Kansas. The list includes Empire, Mid-Continent, Shaffer, Pierce, Sinclair, and Barnsdall. The Seminole supply has tended to relieve the tightness in all sections of the Mid-Continent and with rare exceptions refiners this year have been able to secure all the crude they wanted with very little premium paying reported.

In regard to Seminole it is also noteworthy that despite the record production of that area there was not a new plant built in that section. A few years ago a new producing area the size of Seminole would have resulted in a number of small refineries being built in or near the field. In the Seminole development the large and small pipe line operators quickly made connections to the field and prevented the accumulation of distress crude oil which in the past has been responsible for the building of new plants.

Gasoline Production

In regard to gasoline production the trend in Mid-Continent refining has been similar to that of other major refining areas. Refiners are constantly increasing the yield of gasoline from crude oil. In the Mid-Continent the average yield in 1924 was 40 per cent; 1925, 43.1 per cent; 1926, 45.3 per cent, and the first 10 months of 1927, 47.1 per cent. In individual cases the yield exceeds 50 per cent. These percentages include the natural gasoline purchased by refiners and blended with their straightrun and cracked gasolines.

There has been relatively few new installations of cracking units this year in the Mid-Continent, but improvements in operating methods have added materially to the gasoline yields. This applies not only to cracking operations but also the skimming plants. Cases can be cited where the refinery owners through their cracking facilities and better fractionating equipment in their crude oil battery have increased their gasoline yields from 25 to 50 per cent without adding to their crude oil runs to stills.

Gasoline Stocks

As shown in the accompanying chart and table, Mid-Continent refiners this year have had relatively little gasoline in their storage tanks. Gasoline production

MID-CONTINENT REFINERY SITUATION

Daily crude oil runs to stills 20,000 bbls. greater in 1927 than in 1926 despite a decrease in the number of operating plants.

Eight per cent increase in gasoline production in 1927 over 1926 with a 2 per cent increase in gasoline yields from crude oils. Average gasoline stocks in 1927 less than in 1924 despite a 50 per cent increase in production.

Daily kerosene production practically the same for the past three years. Kerosene stocks exceptionally low during the past year.

Gradual decrease in percentage of fuel oil and gas oil during the past four years. Rapid increase in stocks during latter part of the past year so that present stocks are highest in several years.

Production of lubricating oils and wax decreasing.

Large increase in production of petroleum coke and petroleum asphalt. Coke production for 1927 approximately 25 per cent of the entire output for United States.

TABLE 1—Crude Oil Runs to Stills and Production of Refined Products of Mid-Continent Refineries for 1924, 1925, 1926 and the First 10 Months of 1927. Data Given in Thousands of Barrels, Pounds and Tons
(Bureau of Mines Report)

	Crude Oil Runs to Stills		Production											
			Gasoline		Kerosene		Fuel Oil-Gas Oil		Lubricating Oil		Wax (Lbs.)		Coke (Tons)		Asphalt (Tons)	
	Year	Daily Average	Year	Daily Average	Year	Daily Average	Year	Daily Average	Year	Daily Average	Year	Daily Average	Year	Daily Average	Year	Daily Average
1927*	132,628	436	62,510	205	10,129	333	53,588	176	2,266	7.4	42,384	139	235	7.7	21.8	.71
1926	152,196	416	69,044	189	12,211	334	63,626	174	2,820	7.7	53,649	147	195	5.3	28.8	.78
1925	149,808	410	64,533	176	12,140	332	64,533	176	3,090	8.4	53,303	146	121	3.3	11.2	.3
1924	123,356	337	49,442	135	11,520	314	55,731	152	2,706	7.4	55,849	152	65	1.7	1.2	.03

*10 months.

TABLE 2—Shipments and Stocks of Refined Products for the Mid-Continent Area. Data Given in Thousands of Barrels, Pounds and Tons
(Bureau of Mines Report)

	Gasoline		Kerosene		Lub. Oils		Fuel-Gas Oil		Wax (lbs.)		Coke (tons)		Asphalt (tons)	
	Shipments	Stocks End of Year	Shipments	Stocks End of Year	Shipments	Stocks End of Year	Shipments	Stocks End of Year	Shipments	Stocks End of Year	Shipments	Stocks End of Year	Shipments	Stocks End of Year
1927 (10 mos.)	62,980	3,122	10,835	593	2,248	426	51,990	8,302	46,573	4,968	218.3	68.2	22.4	1.5
1926	68,962	3,592	11,708	1,289	2,846	458	62,816	6,704	48,180	9,157	174.3	51.2	27.7	2.
1925	64,452	3,510	12,541	786	3,035	484	64,990	5,814	53,752	3,688	113.2	29.9	10.4	1.
1924	49,609	3,429	11,311	1,187	2,519	429	53,672	5,025	53,660	4,137	46.9	21.2	1.2	.2

this year will be approximately 50 per cent greater than in 1924, but the average monthly storage will be less this year. The peak in gasoline storage this year was less than that in 1924, and the stocks on hand the last day in September of this year was lower than at any time during the past four years.

Mid-Continent refiners have found that the accumulation of heavy gasoline storage during the winter months is not profitable. Instead of selling the storage gasoline at high prices during the summer months, their inventories have generally been reduced at prices which were lower than when the gasoline was run to storage. Their cracking facilities have given the refiners a much greater flexibility in regard to gasoline production, and this fact has also tended to keep inventories down to a minimum. It is interesting to note in this connection that the low gasoline stocks carried by refiners this year have not aided their market. Average gasoline prices this year are lower than any previous yearly period in the history of the Mid-Continent, again demonstrating that the ups and downs of gasoline storage have little significance during a period of overproduction in crude oil.

Kerosene Situation

In regard to kerosene, the Mid-Continent refiners as a unit have also followed the trend in operation which is characteristic of the entire United States. The average daily production (Table 1) has been practically the same this year as it was in 1926 and 1925. Increasing their gasoline yields refiners necessarily have made some sacrifices in their kerosene production. In a sense this has been a fortunate development for the reason that the increased demand for the product is relatively small. In contrast to the gasoline market situation this curtailment of kerosene yields has enabled the refiners to maintain satisfactory prices for their kerosene output.

The kerosene yield from crude oil run to stills in the Mid-Continent during 1924 was 9.3 per cent, 8.1 per cent in 1925, 8.02 per cent in 1926, and 7.6 per cent for the first 10 months of this year. The greatest part of this decreased yield can be accounted for by the new towers which most of the refiners have installed on their crude oil batteries during the past two or three years. These towers enabled the operators to take all the gasoline fraction out of the kerosene.

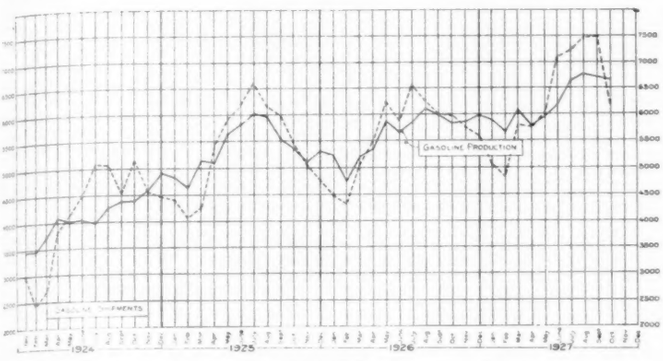
Fuel Oil and Gas Oil

There also has been a gradual decrease in the percentage of fuel oil and gas oil obtained at Mid-Continent refineries. In 1924, 45.2 per cent of crude oil run to stills was fuel oil and gas oil. Since that time this percentage has decreased to 43.1 per cent in 1925, 41.8 per cent in 1926, and 40.4 per cent in 1927 (first 10 months). The outstanding development in the Mid-Continent fuel oil and gas oil situation has been the large increase in stocks this year. With an overproduction of crude oil more ful oil has been available than the market could readily absorb. There has also been surplus of gas oil. Stocks based on the latest available reports of the Bureau of Mines are greater now than any previous period in the history of the Mid-Continent.

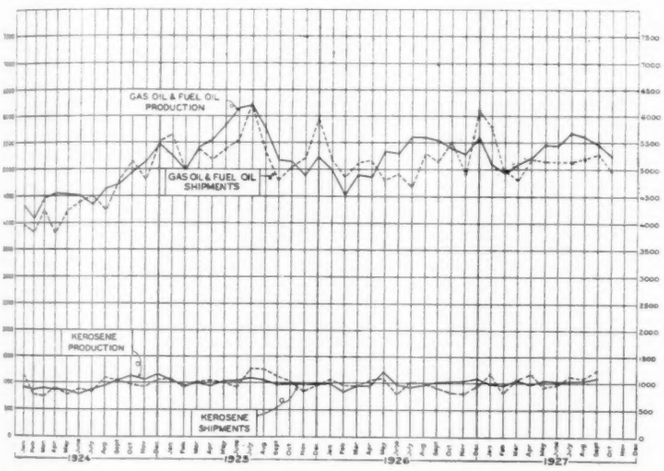
Refiners have added to their storage in the expectation that there would be a turn in the crude oil production situation which would bring a better market situation for their fuel oil and gas oil. The increasing production of low gravity crudes in West Texas and the California situation does not point to an immediate relief in this situation.

The trend in lubricating oil production is downward. The average daily production this year will be less than it was in 1926 and 1925. The percentage recovery for the past four years follows: 1924, 2.2 per cent; 1925, 2 per cent; 1926, 1.8 per cent, and 1927 (10 months), 1.7 per cent. Prices on lubricating oils have not been conducive to enlargement program in the refining of lubricating oils and the greater part of the increased production in United States is coming from the major refineries located along the seaboard.

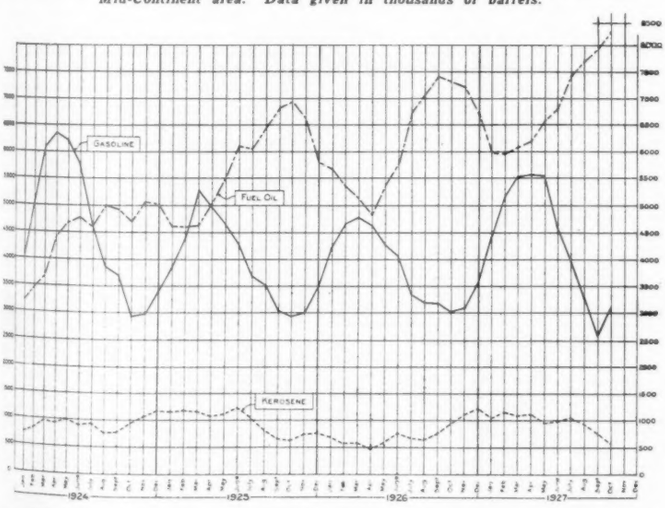
Wax being a by-product of lubricating oil manufacture, it follows that the Mid-Continent production is also decreasing. The average daily production of wax in the Mid-Continent in 1924 was 152,000 pounds; 1925, 146,000 pounds; 1926, 147,000 pounds, and 1927 (10 months), 139,000 pounds. Prices this year have been lower than at any time since 1922, and this fact accounts for the large drop in production this year.



Gasoline production and shipments in Mid-Continent area. Data given in thousands of barrels.



Gas oil and fuel oil production and shipments and kerosene production and shipments in Mid-Continent area. Data given in thousands of barrels.



Gasoline, kerosene and fuel oil and gas oil stocks in the Mid-Continent area. Data given in thousands of barrels.

MORE OPTIMISTIC IN EASTERN MARKETS

(Continued from Page 229)

This compares with 3,933,000 bbls., or 562,000 bbls. a day, for the week ended December 14.

The feature of the movement for the week ended December 21 consisted of record imports from South America and Trinidad (all grouped as South America), of 1,387,000 bbls., a daily average of 198,000 bbls. This follows a week in which a record had been established up to that time of 1,153,000 bbls., or 165,000 bbls. a day, and seems to establish South America definitely as a major influence in the Atlantic Seaboard markets.

Imports from Mexico reached a new low mark of 68,000 bbls., a daily average of only 10,000. This compares with 186,000 bbls., or daily average of 27,000 bbls., the preceding week.

Receipts of oil from California totaled 289,000 bbls., a daily average of 41,000 bbls., against 176,000 bbls., or 25,000 bbls. daily, for the week ended December 14.

Receipts from the Gulf Coast totaled 2,064,000 bbls., a daily average of 295,000, against 2,418,000 bbls., or 345,000 bbls. daily, for the week ended December 14.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports for the past three weeks; also monthly record for the past 12 months (figures in barrels):

	Week Ended		
	Dec. 21	Dec. 14	Dec. 7
Gulf Coast	295,000	345,000	362,000
Pacific Coast	41,000	25,000	121,000
South America	198,000	165,000	75,000
Mexico	10,000	27,000	45,000
Total	544,000	562,000	603,000

Daily Averages by Months

	Gulf	Pacific	S. Am.	Mexico	Total
1927:					
Nov.	318,000	62,000	109,000	42,000	531,000
Oct.	314,000	98,000	91,000	38,000	541,000
Sept.	336,000	97,000	99,000	69,000	601,000
Aug.	397,000	90,000	78,000	80,000	645,000
July	406,000	83,000	49,000	78,000	616,000
June	378,000	118,000	47,000	68,000	611,000
May	332,000	58,000	53,000	91,000	534,000
April	318,000	93,000	61,000	69,000	611,000
March	345,000	103,000	81,000	36,000	565,000
Feb.	379,000	89,000	48,000	40,000	556,000
Jan.	362,000	73,000	61,000	49,000	545,000
1926:					
Dec.	363,000	57,000	61,000	49,000	530,000

The foregoing figures are based on the carrying capacity of incoming oil-laden tankers.

CHICAGO MARKETS ARE AWAITING DEVELOPMENTS

(Continued from Page 228)

were right but it seems impossible for a seller to make a price for any period of several months that will be safe and at the same time be acceptable to the buyers.

West Texas Crude

Crude from West Texas has been coming to this city for some time and several distributors and some refiners have been using it but it has not been generally offered until last week. Some offers were received here of a good crude at a price on a Group 3 basis of 80 to 85 cents or 60 to 62½ cents at the wells. The specifications were 28-30 gravity, zero to 10 cold test; less than 2 per cent sulphur; flash 150 degrees and viscosity 50 to 100. Some quantity sales were reported but the industries did not seem interested, preferring a good 16-18 Oklahoma fuel oil at the present price. Most of the larger plants have heating coils in their tanks and have little trouble in handling a fuel oil with a fair cold test, say around 30 degrees. They are not insistent on zero oils but many do object to the sulphur content largely on account of its coloring effects. Even brick makers object to it for this reason. Some of the distributors can and do use it. A large nearby refinery has been running this crude for some time and has sold a vast amount of fuel oil from it that has ben desirable as to cold test and other qualities but was objected to by some because of the sulphur content. This oil was sold at as low as 72½ cents and as high as 77½ cents, the present market price to dealers and large consumers.

Demand Not Active

The demand last week was far from active and many shipments on contracts and orders were held up because of the shutting down of the plants for the holidays and inventory. Some have instructed that regular shipments may be resumed December 28, to arrive after January 2. There has been no large buying and contracts have been few, partly because of the difficulty in securing a satisfactory basis. Some inquiries have been received and when the plants get down to work early in January it is expected that even with the present temperatures there will be some increase in the demand. With lower mercury the demand would be increased through the larger use of oil for heating. But the supply of available oils, including those from West Texas, and from nearby refineries running on that crude are so large that only a moderate increase in prices at most is hoped for by the optimistic while others claim that the wants of so many of the larger concerns are cared for on contracts that there will be no very great increase in the new demand.

One refinery sales office here was instructed last week to withdraw all options and cancel any outstanding quotations, the management giving as a reason that large sales of fuel oil had been made at Tulsa and that a higher market was imminent. Other refiners apparently had not heard of the large sales of fuel oil and continued to take business where

they could get it at the prevailing prices. There was a time not so long ago when very little fuel oil was to be had this side of Group 3 but today there is a large output right at our doors and in addition supplies are received from the more distant plants or local organizations. One Ohio refiner has representation here and has sold some fuel oil at low prices for points in differential territory which have been supplied under previous conditions out of the Group. So the situation here is so difficult that it is exceedingly difficult to agree on a price for the future. The price list during the week just closed showed absolutely no changes. Zero oils commanded a good premium but the ordinary cold test oils were selling slowly at the same prices as during the previous week. For deferred shipments higher prices were suggested but little advance business was actually closed. Some contracts are being talked over and possibly will be signed during the coming week but the situation is still under the influence of a combination of holiday spirit and the preinventory insistence that as much as possible of new business be put over until after January 1.

Lubs Steady

There were no new developments in the lubricating oil situation. In reviewing the situation the head of one organization which refines and markets only high-grade products and sells to but one dealer in a locality stated that its business had shown an increase over 1926 every month of this year and that its November, 1927, business was only a few dollars under its sales for August, 1926. He stated that other refiners and compounders of high-grade lubricating oils had had at least as good business he believed and that the motorists were demanding and the dealers with settled trade were supplying a better grade of lubricants. The refiners of these grades had all of them prospered and this in the face of strong competition from refiners who controlled a large number of stations either through ownership, lease or by contract. Refiners report a steady business in tank car lots to compounders but the jobbing trade is quiet right now. The industrial demand also reflects the closing down of many plants and the restrictions placed on buyers to hold their orders until the new year.

Tank Wagon Scale

The tank wagon scale has not been changed over the territory and reports of a general change before the first of the year seem very likely not to be true. Neither is any change in the Q. D. A. plan looked for by those best posted. There has been a lot of talk of this and some country reports that might indicate some revision was being considered. It seems to be admitted that to do away with the discount plan would amount to nothing because there would be many who would continue to give rebates and discounts after the plan had been discontinued by the larger companies just as they did before it was put into operation. If the plan were discontinued and at the same time a drastic cut made in tank wagon and station prices everybody would suffer and there would undoubtedly arise an outcry about the oppression of the small operator and putting the small man out of business.

There is a good deal of what might be called "bunk" about this demand for some sort of a change. Any suggestion of a change that would really help matters would be gladly received and carefully considered by the leading organizations. The average suggestion would simply result in a return to conditions that were so bad they fairly forced the large organizations to put into effect the present Q. D. A. plan, in the hope that it would regulate a custom that had become so general that there seemed to be no possible way to eliminate it from the distributing end of the industry. If every oil company that did not make money last year would retire from the business the pathway of those left would be easier but every such concern lives in the hope that it will be able to make money next year. Why? If they cannot make money under present conditions how can they expect to make money under the conditions that may prevail next year? The conditions may be worse.

TEST IN SMITH COUNTY, TEXAS, DRY AT 3,260 FEET

By Special Correspondent

MEXIA, Tex., Dec. 24.—Gaither and others' No. 1 Parker, the only test in Smith County, has been abandoned at 3,260 feet. It was located in Section 36, Quevedo grant.

The Humble Oil & Refining Co. has assigned a quarter interest in 54 Anderson County leases to the Gulf Production Co. The leases which are in the northern and eastern parts of county cover several thousand acres.

C. W. Hicks and others will drill another test in Limestone County on acreage of the Transcontinental Oil Co. The location has been made in 919 feet from the west line and 815 feet from the north line of the F. R. Richardson 70-acre property near Horn Hill.

There are eight producing wells in the Cedar Creek Field producing around 600 bbls. per day. In the same area the Transcontinental Oil Co. was below 1,500 feet in No. 1 R. P. Ward, Varella Survey. Alexander & Liles have derrick up for No. 1 E. H. Jackson, McKenzie Survey, a wildcat test.

The Humble Oil & Refining Co. was below 4,015 feet in its No. 1 Elliott & Clarke, the short-lived gusher in Cherokee County, in which the company decided to make a deep test. A log of this well shows the following data: 3,845-54 feet, shale and broken sand; 3,854-58 feet, sand showing oil; 3,858-60 feet, sand; 3,860-62 feet, hard sand; 3,862-89 feet, sand; 3,889-96 feet, red bed; 3,896-3,900 feet, white sand; 3,900-06 feet, broken shale and sand; 3,937 feet, sand and shale, 3,978-79 feet, hard sand; 3,983 feet, hard sand which tested salt water.

In Anderson County, the Humble Oil & Refining Co.'s No. 3 Spencer Clemmons was delayed by a fishing job for a 4-inch drill stem, total depth 3,964 feet, in sand. The same company had a rotary rigged up for No. 1 Felix & Smith.

In Freestone County the Roxana Petroleum Corp. was drilling sticky shale at 2,736 feet in No. 1 Thiele, T. C. R. R. Survey. Orbitt Oil Co. was shut down at 3,464 feet, where a core was taken which showed salt with a trace of oil.

ROCKY MOUNTAIN AREA

(Continued from Page 69)

feet without reaching the objective Dakota sand, interest was switched to the Essok well as the test most likely to reach the objective. It was drilled to 5,225 feet and had the 4¾-inch casing at 5,135 feet. The test had not reached the Frontier, which lies 450 to 550 feet above the Dakota, and it was considered doubtful if the objective could be reached. It was decided to go back and underream and lower the 6¼-inch casing. This string was being run at 4,725 feet when it was discovered that oil was standing in the hole 500 feet off bottom with several bridges intervening.

Geologists and officers of the company, and Paul B. Whitney, who first mapped the structure, went to the well to study the showing. The presence of the oil was puzzling in as much as none had been encountered from the top to the present depth, and the hole was still several hundred feet off of the objective. The oil appears to be of about 41 gravity and dark green with paraffin base and differs materially from the quality of the oil found in the Hygiene at 3,400 feet in the Deines well. The oil was mixed with a little water that had been run for drilling purposes. A tomato can full was poured out on some rope and ignited. It made a blaze 5 feet high, indicating the presence of considerable gas. The hole is supposed to be bottomed near the top of the Niobrara.

The test is running 180 feet higher than No. 1 Deines, which had a little show of oil at the bottom when drilling was suspended. If the oil is coming from the Dakota through 500 feet, or more, of shale it makes the operation very promising. On the other hand, it may be shale oil from the Frontier, or Wall Creek, which has never been productive in the State. Since the test has had no shows up to this time, it is believed the oil must be coming up from some lower horizon and makes the test very interesting.

Iles Dome

The Iles Dome operation in Moffat County is assuming greater proportions as the plans of the companies holding acreage are developed. A new location was announced this week, this being the Texas Production Co.'s No. 17 State, 660 feet east and 220 feet north of the SW cor. NW SE Section 15-4n-92, a joint operation with the Kinney-Coastal Oil Co., the latter owning a 25 per cent interest and the Texas Production Co. 75 per cent in the operation. The location is the farthest north of any of the wells drilled below the Dakota and is estimated to be about 65 feet lower on the structure than the Texas Production Co.'s No. 5 Parkinson, NW NW Section 23-4-92, which came in for 600 bbls. initial in the Morrison.

Another well to get under way is L. L. Keith's No. 1 Milliken, SW cor Section 14-4-92, which has commenced spudding. Four rigs consigned to the Texas Production Co. were reported in Craig, indicating that company is preparing to enlarge its drilling campaign, and as the Midwest Refining Co. is starting three new wells, it looks as if there will be plenty of activity. Work of constructing the links necessary to give both the Midwest and Texas companies their own lines from Iles to Craig is going ahead, and tank builders are arriving to erect the 55,000-bbl. tank for the Midwest at Craig. It is understood that just as soon as the Midwest's line is finished, the company will begin shipping crude from Iles by rail from Craig to the Utah Oil Refining Co. at Salt Lake City. That will mean a termination of the temporary agreement under which The Texas Company has been buying the Midwest's production. The construction of any major pipe line project will depend upon the production that is developed.

The three new wells being started by the Midwest are its No. 3-8D Shaw, NE NW NE Section 27-4-92, an offset on the south of No. 34-8D Parkinson; No. 33-8D Parkinson, SE SW SE Section 22-4-92, an offset on the north to No. 4-8D Shaw; and No. 7-8D Parkinson, NW NW Section 23-4-92, an offset to the Texas Production Co.'s No. 6 Parkinson. Midwest Refining Co.'s No. 4-8D Shaw, NW NE Section 27-4-92, joint with the Yarg Production & Refining Co., which made 1,010 bbls. initial through a five-eighths inch choke from the Morrison at a total depth of 3,276 feet, began flowing at the rate of 1,400 bbls. a day when the mud was pumped out after it was killed to sidetrack the 8¼-inch bit at the bottom. Same company's No. 8-8D Parkinson, NW NW Section 23-4-92, is fishing for bailer at 1,759 feet, and its No. 34-8D Parkinson, SE SW Section 22-4-92, is circulating to lower casing to 3,112 feet after shutting off 11,000,000 feet of gas in the first Morrison. The Texas Production Co.'s No. 17 Parkinson, NW SW Section 23-4-92, is underreaming at 3,480 feet to lower the 4¾-inch to 3,520 feet. This well topped the Sundance at 3,500 feet and made 600 bbls. initial from the Morrison between casings and more oil from the Sundance. The purpose is to produce the horizons separately after making a shutoff to enable a study of the various formations. Same company's No. 6 Parkinson, NW NW Section 23-4-92, is bottomed at 2,590 feet with the 10-inch at 2,580 feet. Same company's No. 13 Parkinson, NE SW Section 22-4-92, is drilling in shale at 395 feet. Shaffer Oil & Refining Co.'s No. 205 Yarg, NW NW Section 26-4-92, joint with the Yarg Producing & Refining Co., is drilling at 2,610 feet in the top of the Frontier.

Moffat Dome

On the Moffat Dome, to the northeast of Iles, the Texas Production Co.'s No. 10 Knowlton, Section 33 5-91, is still an unknown quantity in the Sundance, which was topped at 4,385 feet, though it is a good producer in the Morrison. It is bottomed in hard white sand at 4,426 feet with both oil and water in the hole. An effort will be made to bail down the water and make a test of the oil show at 4,385 feet. The quantity of water is not very large and there is still considerable doubt as to its origin and even as to whether the horizon is the Sundance, or a sand in the Morrison. The company, however, is going on the presumption that it is the Sundance.

In Routt County, the Texas Production Co. has one active drilling operation on the Tow Creek Dome, this being its No. 1 Wilbur Rule, SW NW Section 5-6n-86, which was reported last week swabbing 30 bbls. of fluid from a total depth of 3,970 feet. It is drilling again at 4,080 feet in shale with the hole caving. The horizon tested was showing water with the oil and it did not appear commercial, so it was decided to go deeper. The Great Western Oil Co.'s No. 1 State, NW Section 17-6-86, is bottomed at 1,700 feet and underreaming.

A deal for additional drilling on the Northeastern Colorado Oil Co.'s No. 1 State, Section 36-8n-55, Willard Dome, Logan County, was announced this week. The company stated that a major company, identity not disclosed, had agreed to finance completion in return for a one-fourth interest in the leases and a one-eighth interest in the drilling well provided production is encountered. The test is bottomed at 5,435 feet, is through what is believed to be the main Dakota sand, and is drilling ahead to test the lower horizons. The sand cut was 128 feet thick and showed some water at the bottom, but was dry at the top.

Huerfano County

The Kinney-Coastal Oil Co.'s No. 1 Pinto, SE Section 24-26s-68, Escondido Dome, Huerfano County, commenced spudding this week. This is a joint operation with the Texas Production Co. It should not take long for this test to become interesting as the first horizon, the Timpas lime, is expected at 800 feet, and between that depth and the Pennsylvanian, expected at 2,200 feet, there are the Carlisle, Dakota, Lakota and Morrison sands.

In Arapahoe County, just east of Denver, the McDeb Drilling Co.'s No. 1 Fitzsimmons, SE Section 7-4s-66, is bottomed at 3,080 feet and circulating to loosen the 10-inch so it may be lowered to the bottom. The hole, according to an official, is through a 45-foot sand which showed a slight saturation at the top and water at the bottom. This is supposed to be the equivalent of the Shannon sand in Wyoming. This test is said to have been located with the aid of some kind of a geophysical instrument, and the company has financed drilling through a stock selling campaign.

A. L. Nisbett, of Los Angeles, and J. C. Burke and Jack Schofield, of Bakersfield, Calif., are reported in Durango in connection with a deal to test the Juanita structure in Archuleta County, in southwestern Colorado. It appears that this deal has not yet been closed. The Miley Oil Co. has some acreage on the structure and other acreage is held by J. T. Beardsley. The deal is said to involve the drilling of a joint well using the rig and casing still on location at the Hutchison well drilled some time ago by the Miley interests in La Plata County.

The west extension of the Florence Pool in Fremont County has three wells drilling by the Continental Oil Co. and several by independents. The Continental's No. 1 M. E. Hall, NW NE Section 2-19-70, has commenced spudding and is drilling at 350 feet. Same company's No. 1 Lucas, SW SE Section 3-19-70, is drilling at 800 feet, and No. 1 Robbins, Section 3-19-70, is shut down. In the south extension, the Travis-Raddatz Syndicate has a completion in its No. 15 Travis, Section 28-20-69, which started off at the rate of 150 bbls. a day from the shale at 1,950 feet.

The West Side Development Co.'s No. 1 Besaw, Section 5-8n-69, northwest of Fort Collins, which reported a show of

oil at 4,190 feet through a hole full of water, is drilling at 4,205 feet, supposedly in the Pennsylvanian. The showings are continuing, but it is not yet apparent whether anything commercial has been opened up as the hole is being drilled wet and no test has been made.

The Indian Petroleum Co.'s No. 1 Gilmore, Section 4-45-16, the only operation in Montrose County, is sidetracking 6¼-inch bit at 4,210 feet.

The Continental Oil Co.'s No. 1 Hoye, Section 34-9n-78, on the South MacCallum Dome in Jackson County, is drilling at 4,465 feet. It is believed to be in close proximity to the first Dakota sand and the prospects are favorable for a completion about Christmas day, a year later than the discovery well on the North MacCallum Dome came in.

Wyoming

Two completions and several abandonments were reported in the Salt Creek Field in Wyoming for the week. Wyoming Associated Oil Co.'s No. 18, SE Section 14-40-79, was completed in the Wall Creek at 1,420 feet with an initial production of 42 bbls., and same company's No. 22-L, SW Section 23-40-79, was completed in the Lakota at 2,245 feet, with initial production of 20 bbls. The Continental Oil Co.'s No. 35-A, SW Section 34-40-79, was abandoned while drilling. The Texas Production Co.'s No. 13-AT, NE Section 24-39-79, in the southern part of the field close to Teapot Dome, and the Carter Oil Co.'s No. 16-A, SE Section 5-39-78, on the east side, were abandoned after having been on production for some time. In the La Barge district in Sublet County, the California Petroleum Corp.'s No. 2-I, Section 3-36-113, was shut down after running a liner, and its No. 7-E, Section 34-27-113, was completed at 903 feet, but not tested. Same company's No. 4-A, Section 34, also was completed, but not tested. The Ohio Oil Co.'s No. 12 Harrison & Cooper, Section 2-19-78, in the Rock Creek Field, was completed at 3,465 feet with an initial production of 100 bbls.

The 63 producing wells in the La Barge Field are undergoing a 30-days' test by the Midwest Refining Co. in conjunction with the operators, the purpose being to determine if sufficient production has been developed to go ahead with the projected pipe line from the field to Opal, the railhead, in the spring. Contracts were signed several months ago between the Midwest interests and the California Petroleum Corp., the principal operator, whereby the Midwest agreed to build the line when a production of 2,000 bbls. a day was available for transportation, and the California Petroleum agreed to sell its own output, and such other production as it had available, to the Midwest. The oil will go to the Utah Oil Refining Co., a subsidiary of the Midwest, at Salt Lake City. The California company will transfer its pipe line permit to the Midwest as part of the transaction. This permit originally was secured by the Beneficial Oil Co. interests.

Hiawatha Area

Two new operations are getting under way in the Hiawatha area on the boundary between Sweetwater County, Wyoming, and Moffat County, Colorado. The Custer Petroleum Corp., controlled by Pittsburgh people, recently acquired the Baackes permit, formerly known as the Wiff Wilson permit, and has contracted with the Ohio Oil Co. to operate the property. The Ohio has commenced spudding in its No. 1 Baackes, in the SE SE, Section 24-12-100, on the Wyoming side. The Somir Petroleum Corp. also has commenced spudding in its No. 1 Wheeler, SE SE, Section 13-12-100, on the Wheeler permit, on the Wyoming side, the Somir company drilling for Wheeler. On the Colorado side, the Somir company's No. 1 Wilson, the 58,000,000-foot gas well, is being left undisturbed since it was shut in after completion last year and the Ohio Oil Co.'s No. 1 Kuykendall, which came in recently for 35,000,000 feet, also is shut in. Both are on Section 22-12-100. The only drilling well on the Colorado side is the Reiter-Foster Oil Co.'s No. 1 State, Section 16-12-100, which is cemented at 2,200 feet on top of the big gas sand. It probably will not be drilled in until after the holidays.

The Navy Department, which recently took over the Teapot Dome reserve upon transfer from the Interior Department, is engaged in cleaning out the wells on the reserve preliminary to plugging them. Nine strings of tools are being operated in this work. The shutting in of Teapot will mark the end of that development for the present, and it will be interesting to watch the effect on producing wells in the southern end of Salt Creek. One of the issues involved in the controversy was whether Salt Creek was draining the oil from Teapot.

Most of the wells in the Oregon Basin Field in Park County, are drilling ahead steadily in spite of the cold weather, though one or two had to shut down. One of these was the Linco Petroleum Co.'s No. 1 Rousseau, Section 33-51-100, bottomed at 1,675 feet. The same is true of the La Barge operations in Sublet County, Reece Oil Co.'s No. 2, NW Section 27-27-113, cemented the 8¼-inch at 1,248 feet, and cut an oil sand making 1 bbl. per hour at 1,250-58 feet. It will be drilled deeper. Midvale Oil Co.'s No. 1 Fallis, Section 8-27-113, had to shut down on account of frozen water lines.

Among the wildcats, the Buck Creek Oil Co.'s No. 1 Delahoyde, Sestion 25-37-63, has succeeded in getting a water shutoff at 4,032 feet, and is making new hole at 4,042 feet. This well which showed for 250 bbls. less than 100 feet above present bottom, is expected to run into another sand shortly. The Graybeal Syndicate's No. 1, Section 16-28-81, on the Graybeal Dome in Carbon County, is shut down for the winter at 4,380 feet. It is to be drilled to 5,700 feet. Western Petroleum Co.'s Seaman Hills test in Section 13-35-62, Niobrara County, has shut down until spring, and Murphy & Groves' test on Section 40-41-80, in Johnson County, on the Duggout structure, is shut down at 825 feet, and reported to have a hole full of water. Johnson and others are reported to have encountered artesian water at 1,450 feet on Section 16-23-104, Boar's Tusk anticline, in Sweetwater County.

Utah

Utah operations revealed little out of the ordinary for the week, there being nothing of importance from any of the wells except that the Texas Production Co.'s No. 1 Shipley, Section 5-27-14, on the Sweetwater anticline, cut a gray sand at 2,195 feet which showed some dried oil, but no gas. Drilling is in progress at 2,200 feet. The drill is believed to be close to the Shinarump conglomerate which lies above the objective Pennsylvanian sands. The Western Venture Corp.'s No. 1, located 7 miles southwest of Vernal, is down 200 feet in a 12½-inch hole showing an extremely hard yellow limestone formation. No water has been encountered so far and none is expected until a depth of 500 feet has been reached. California parties are behind this operation. The Maud Ellen Oil Co., which started a well on the Neal Dome, 7 miles northwest of Vernal, some time ago, has resumed operations after being shut down for several months. The hole is 550 feet deep and is carrying the 10-inch casing. Immediate plans are to shut off a flow of artesian water encountered at 385 feet. This test, which is being drilled by Idaho parties, has the Pennsylvanian as the objective.

Utah Southern Oil Co.'s No. 1 John L. Shafer, Section 36-26-20, Cane Creek Dome flank test, is building rig and expects to commence spudding by the first of the year. Same company's No. 1 Canyon, Section 18-41-19, East Dome, San Juan County, is drilling below 1,425 feet. Boulder Knoll Oil & Gas test on Section 17-34-25, near Monticello, has set the 10-inch casing at 2,000 feet and is ready to go ahead. It has not made any new hole for several months. Midwest Exploration Co.'s No. 1 Early, Section 13-14-6, Duchesne anticline, is underreaming at 2,740 feet, and same company's No. 3 Ashley Creek, Uintah County, is still bottomed at 1,655 feet, working on the 10-inch casing before drilling into the big gas sand expected in the lower Morrison.

The Continental Oil Co.'s No. 1 Boundary Butte, Section 23-43-22, San Juan County, is again making new hole after having been bottomed at 1,590 feet for more than two years. It is now drilling at 1,950 feet. This test was started by the Southwest Oil Co. for a joint operation of the Midwest companies and the Continental Oil Co., but was held up by litigation with the Government until after Congress passed relief legislation. It is on an Indian reservation created by presidential proclamation, but the permits were taken up under the general leasing act of February 25, 1920. It had a show for 25 bbls. in the Shinarump conglomerate when drilling was suspended and it is now drilling on down to the Pennsylvanian. The next few months will show whether the big issue made out of these holdings was worth while.

Montana

Oil operators in the Sunburst Field are asking that the Calgary weather bureau of Calgary, Canada, send its weather prognostications throughout northern Montana for the benefit of the people living in that part of the state. During the blizzard that narrowly escaped taking a heavy toll of life in the oil fields and on the new pipe line from Sunburst to Great Falls the past weeks, many of the outlying camps could have had plenty of time to make all snug before the storm struck had the Calgary warnings been broadcasted in the United States. As it was, a truck load of pipe line men were marooned and eventually came in with some frozen fingers and feet. Some of the field workers had narrow escapes.

The location of the Calgary weather bureau of the Canadian government is such that storms headed for northern Montana invariably pass over the Calgary region many hours and sometimes a whole day before they reach the area around Sunburst. People living in Coutts, just across the national boundary north of Sunburst Field knew of the approaching blizzard long before it struck and were ready for it. Down in the field, most of the field men had no idea a storm was coming and many leases sustained heavy losses through the freezing of pipe lines.

Sunburst Operations

The Hannah-Porter-Harte well No. 2 that caused the big fire in November, on Section 7-34-1, Sunburst Field, is now making freakish production that cannot be accounted for in any normal theory of oil production. This well flowed at an estimated rate of about 200 bbls. daily when it was drilled in and the fire caught. After the fire was out the well started off at 200 bbls. daily, but suddenly started to increase its production and is now making 600 bbls. daily and gives promise of increasing this figure in the near future.

The large companies have shut down all drilling wells in Sunburst and are pumping only. The Ohio Oil Co. is operating its pumping powers, but for the first time in several years, the company has no string of tools busy. The Texas & Pacific Oil Co. (formerly the Homestake Exploration Co.) has also stopped all its drilling tools and this is the first time this company has not had a well drilling since it started operations in Sunburst.

The Northern Natural Gas Co. spudded in a new well on Section 19-33-1 and also brought in a new gasser in the same part of the field. This new well found a gas flow of 3,000,000 feet at 1,230 feet and will be used as a gas producer for the Great Falls gas line.

A proposition to extend the gas line from the Havre system in Hill County to supply cities and towns between Havre and Shelby is now being considered by the builders of the Great Falls gas line to Sunburst. This would link the Havre and Great Falls systems in such a way as to enable either source of gas to supply the two services in case of breakage. It is on the same order as the super power systems proposed in the East.

ROCKY MOUNTAIN PRODUCTION
Runs From the Field

Wyoming	
Salt Creek	42,570
Teapot	.....
Big Muddy	2,700
Grass Creek	2,480
Elk Basin	630
Greybull	20
Dutton Creek	10
Notches	.....
Rock River	2,750
Rex Lake	.....
Lance Creek	650
LaBarge	630
Mule Creek	610
Poison Spider	180
Hamilton	610
Osage	390
Lander	890
Pilot Butte	.....
Ferris	50
Byron	40
Lost Soldier	2,600
Simpson Ridge	80
Total Wyoming	57,890
Montana	
Cat Creek	1,850
Lake Basin	170
Kevin-Sunburst	9,500
Total Montana	11,520
Colorado	
Florence	715
Moffat	1,138
Fort Collins	3,063
Walden	.....
Iles Dome	1,380
Rangely	100
Tow Creek	478
Boulder	25
Total Colorado	6,899
New Mexico	
Rattlesnake	.....
Hogback	560
Cap Rock	103
Table Mesa	.....
Artesia	1,394
Total New Mexico	2,057
Total Rocky Mountain	78,366

TEXAS PANHANDLE

(Continued from Page 56)

No. 2 Hinson, pumping 75 bbls. oil and 2 bbls. water from 2,189-95 feet. Painter's No. 1 Donnell, dry and abandoned at 4,202 feet. Simms Oil Co. and others' No. 1 Ragland, dry and abandoned at 2,385 feet. United Royalty Co.'s No. 1 Wallace, dry and abandoned at 3,998 feet.

COMPLETIONS RANGER DISTRICT

Brown County

Cranfill & Reynolds' No. 19 Smith, shot with 5 and 7 quarts from 1,347-57 feet, initial production 20 bbls. Pandem Oil Co.'s No. 1 Hutton, initial production 48 bbls. from 1,119-30 feet. Phillips Petroleum Co.'s No. 9 Newsome, initial production 150 bbls. from 1,312-26 feet.

Callahan County

National Refining Co.'s No. 1 Moore, dry and abandoned at 2,115 feet.

Coleman County

Magnolia Petroleum Co.'s No. 19 Morris, initial production 55 bbls. from 2,247-53 feet. Peer Oil Corp.'s No. 1 Sealy & Smith, dry and abandoned at 2,507 feet.

Eastland County

Eastland Oil Co.'s No. 3-A Wright, shot with 100 quarts from 3,338-3,360 feet, dry and abandoned, total depth 3,580 feet. Panhandle Refining Co.'s No. 4 Webb, abandoned location.

Shackelford County

Hyde's No. 1 Moberly, show of oil at 1,260 feet, dry and abandoned at 1,330 feet. Milham Corp.'s No. 5 Sedwick, lime from 4,180-84 feet, initial production 25 bbls., total depth 4,350 feet. Swallow and others' No. 1 Reynolds, dry and abandoned at 1,250 feet.

Stephens County

Clark's No. 2 Riddle, initial production 135 bbls. in sand from 1,860-1,873 feet.

JOSEPH S. MITCHELL DEAD

Joseph S. Mitchell, head of the Diamond Drill department of the Sullivan Machinery Co., Chicago, died Thursday, December 22, following an attack of acute indigestion. Mr. Mitchell was in charge of both contracting and sales for the Sullivan company, and his connection with that concern goes back many years. He was credited with unusual expertness in the science of diamond drilling.

REFINING AND MARKETING

Natural Gasoline Production Shows Record Increase

Production of natural gasoline in 1927 will approximate 1,605,500,000 gallons or 20 per cent more than in 1926. This great increase is shown in the Bureau of Mines report for the first 10 months of this year with the last two month's production estimated. The principal increase over the 10 months' period occurred in California where production was boosted from an average of 31,320,000 gallons monthly to 40,570,000 gallons, or 29 per cent more. Texas, as a result of the development of the Panhandle area, ranked second in the amount of increased production. This was raised from 17,590,000 gallons per month in 1926 to 26,216,000 gallons in 1927. Although this increase is not as great as California, in volume, it is the largest increase on the percentage basis, its production having increased 49 per cent in the year.

Oklahoma and Kansas ranked third, the great increase coming from the Seminole Field. Because the Oklahoma production was so large last year, and the effect of the Seminole increase did not come until after the middle of the year, the increase of 5,800,000 gallons per month only raises the percentage 14 per cent. Slight increases are shown for the Rocky Mountain region and the Louisiana-Arkansas group, with the Appalachian and the Illinois-Indiana group showing declines.

The natural gasoline industry is now producing three times as much gasoline per month as was made during the entire year of 1914 and half as much as was made in 1918. This shows the rapid increase made in consumption. Natural gasoline has changed its position from that of an adulterant in straightrun gasoline to that of a very important factor in the total consumption of all gasolines. This year, natural gasoline will represent from 14 to 15 per cent of all the gasoline consumed in the United States.

The detailed production figures covering the first 10 months of this year and all of last year appear below.

Average monthly production of natural gasoline in the United States for the first 10 months of 1926 and 1927 by districts, according to the report of the United States Bureau of Mines, Department of Commerce. (Production shown in gallons.)

	1927	1926	Increase
Appal'ch'n	7,610,000	7,670,000	*60,000
Ind.-Ill.	1,330,000	1,450,000	*120,000
Okla., Kans., etc.	47,250,000	41,450,000	5,800,000
Texas	26,216,000	17,590,000	8,626,000
La.-Ark.	6,900,000	6,190,000	710,000
Rky. Mtn.	3,929,000	3,520,000	400,000
Ttl. east of Calif.	93,226,000	77,870,000	15,356,000
California	40,570,000	31,320,000	9,250,000
Ttl. U. S.	133,796,000	109,190,000	24,606,000

*Decrease.

OIL FIRE AT TIENTSIN

TIENTSIN, Dec. 24.—The plant of the Standard Oil Co. of New York was set on fire here today, causing the fear of communist terriorism, coupled with incendiarism, to spread in North China.

The entire plant, worth, with its stores, nearly $25,000,000 in gold, was endangered. The candle factory is a mass of ruins. The fire was finally brought under control. No tanks were exploded and there were no casualties. The loss was estimated at from $5,000,000 to $10,000,000 gold.

REFINERY BUILDING PROGRAMS IN PROSPECT FOR COMING YEAR

Developments indicating that 1928 will bring important refinery construction programs are apparent as the old year is brought to a close.

The companies most prominently mentioned in this connection are the Empire Oil & Refining Co., Roxana Petroleum Corp. and the Transcontinental Oil Co. No official announcements have been made by any of the companies concerned regarding the construction programs.

It is known that the Empire company has had under consideration the building of a refinery in the Middle West for some time. The refinery if built will be located along the Mississippi River, probably in Iowa. The tentative plans, it is understood, call for the building for an 8 or 10-inch line connecting the refinery with the Mid-Continent pipe line system of the Empire Companies at some point in Kansas. The plant would have a minimum capacity of 10,000 bbls daily.

The Empire company at present has refineries located at Okmulgee, Ponca City and Cushing, Okla., and Gainesville, Tex. These plants at present are handling approximately 20,000 bbls. of crude oil daily.

In recent years the Empire company which is a Cities Service Co. (Doherty) subsidiary has acquired large retail outlets in Iowa, Minnesota and other middle western points. These retail outlets are operated under the name of the City Service Oil Co. By building a refinery in the Middle West the refining company could better serve these retail outlets with lower transportation costs due to the water facilities and the short rail hauls.

According to widely circulated reports, the Shell company either directly or through its subsidiary the Roxana Petroleum Corp. will build a refinery in the Texas Gulf Coast area or along the Atlantic Seaboard. An option on a Gulf Coast site has already been taken, according to reports from that section.

Shell-Roxana

The Shell-Roxana interests have become major distributors of petroleum products along the West Coast and the Middle West as far east as Ohio. The Shell company has three refineries located in California with a combined capacity of 90,000 bbls. daily. The Roxana corporation has three refineries serving the Middle West with a capacity of 80,000 bbls. daily. These plants are located at Arkansas City, Kans., Wood River, Ill., and East Chicago, Ind. The corporation at present is building a pipe line from the new Winkler County production in West Texas to connect to its present pipe line system in Oklahoma. The West Texas crude through this arrangement will be available to its three refineries.

The location of a refinery in the Gulf Coast or East Coast would be necessary if the distribution is to be extended to the Atlantic Seaboard states. One report states that the Roxana corporation expects to build a pipe line from the West Texas fields to the Gulf Coast. It is also stated that the Shell company has sufficient excess crude available in California to afford a supply for an eastern refinery.

The Transcontinental Oil Co. program, according to officials, has not been definitely decided upon at this time. The company, through its properties in the Pecos area of West Texas, has a large supply of West Texas crude with still greater production in prospect. The company has under consideration the building of a pipe line to the Gulf Coast to the West Texas production and is also considering the building of a refinery in or near the field.

The company at present has refineries at Fort Worth, Tex., and at Boynton and Bristow, Okla. The capacity of these refineries totals approximately 15,000 bbls. daily.

MOTOR PRODUCTION WAS 892,895 LESS

The production of cars and trucks for 11 months of 1927 was 892,895 less than for the same period in 1926, according to figures compiled by the National Automobile Chamber of Commerce. The decrease amounts to approximately 25 per cent.

The curtailment of the output of the Ford Motor Co. early in the year with a complete shutdown starting in the late summer accounts for the decrease in output this year. The decrease in motor vehicle manufacture was divided, 850,624 cars and 42,271 trucks.

It is now predicted that the 1928 production of cars and trucks will exceed the 1926 output which established a new record for the automobile industry. The following table shows the production by months so far this year:

	1927		
	Cars	Trucks	Total
January	211,395	42,907	254,302
February	278,997	44,411	323,408
March	365,634	52,033	417,667
April	377,899	51,449	429,348
May	379,139	50,666	429,805
June	295,198	45,956	341,154
July	245,585	33,871	279,456
August	284,489	36,819	321,308
September	235,121	36,519	271,640
October	189,177	38,224	227,401
November	114,076	25,743	139,819
	2,976,710	458,598	3,435,308
11 mos. 1926	3,827,334	510,869	4,528,203

NET INCREASE SHOWN IN REFINERY STOCKS

A net increase of 1,535,000 bbls. of refined and crude oils held at refineries east of the Rocky Mountains during November is shown by the American Petroleum Institute. This increase is fairly well divided among the various classes of refined oils while crude oil stocks held by refiners remained about the same. The detailed increases and decreases are shown below:

	—Bbls. of 42 Gals.— Increase	Decrease
Domestic crude oil	.....	443,000
Foreign crude oil	484,000	.....
Gasoline	621,000	.....
Kerosene	362,000	.....
Gas and fuel oils	612,000	.....
Lubricating oil	130,000	.....
Miscellaneous	.....	231,000
Total	2,209,000	674,000
Deduct	674,000	.....
Net increase	1,535,000	.....

REFINERIES IN BURMAH

Oil refineries in Burmah have shown considerable increase and improvement in recent years. The largest is at Syriam, owned by the Burmah Oil Co. It has a capacity of 25,000 bbls. a day, all the crude being pumped to the plant through a pipe line 275 miles long. The second largest refinery is located at Thilwa and owned by the Indo-Burmah Petroleum Co. This refinery has a capacity of 3,000 bbls. daily and manufactures kerosene, gasoline, lubricants, wax and candles. Following this is a refinery belonging to the British Burmah Petroleum Co., located at Seikkyga and with a capacity of 2,500 bbls. The United Oil Refineries, a company controlled by Indian capital, has recently constructed a refinery with a capacity of 2,000 bbls. daily at Rangoon.

LOUISIANA REFINING CO. TO HOLD CONVENTION

SHREVEPORT, La., Dec. 27.—The annual convention of the retail sales department of the Louisiana Oil Refining Corp. will be held at the Youree Hotel here January 3 to 6, inclusive, with an attendance expected of 150 division, district and agency sales managers from Louisiana, Mississippi, Texas, Arkansas, Ohio and Kentucky.

Business sessions, group meetings, etc., with a series of talks by managers on their several district and agency sales problems, followed by round table discussions with suggestions for remedying these problems drawn from the experiences of others, will be held in the Youree ballroom. The first day there will be a trip covering the company's producing and pipe line properties in the Haynesville district, chaperoned by M. E. Wilson, manager of the production department and M. C. Waldron, manager of the pipe line department. That night the agency managers and filling station men will be taken on a tour of the company's 33 local stations.

The second day will be occupied by a tour of the company's two refineries at Bossier City and Gas Center. Shreveport suburbs, and the compounding plant in Bossier. Sessions of the convention will be taken up with a sketch of the corporation's growth by F. M. Witherspoon, "The Romance of Oil Exploration" by M. E. Wilson and talks on transportation and refinery phases by the heads of those departments, and by F. J. Michlen, head of the chemistry department. The third and fourth days will be devoted to discussion of sales problems.

NEW ROAD OIL PLANT AT EDMONTON, ALBERTA

EDMONTON, Alberta, Dec. 24.—It is reported that American interests engaged in the production of heavy oils are planning to construct a $300,000 plant at Edmonton to extract road oils from heavy crudes. The enterprise is being launched following negotiations with the Alberta highways department. It is understood that the production of the plant will be used largely for the oiling of the highways in the province. The plant will be adapted to run on the heavy Wainwright crudes, but until additional production is developed, imported crudes of asphaltic base will largely be used.

PROTEST CURB PUMPS

CHICAGO, Dec. 24.—The Auto Associated Trades of this city have protested to the city government against the installing of curb pumps. The association claims these pumps are in violation of the city's ordinances and work a hardship on regular dealers as they do not pay the usual distributor's license fees. It was stated that there were at least 50 pumps installed and that more would be placed if the use of the curb pumps was not checked by the action of the city through its legal department.

OIL HEATING IN CANADA

CHATHAM, Ontario, Dec. 24.—At a meeting held recently in Toronto, Canadian manufacturers and dealers in oil-heating equipment took preliminary steps toward the formation of a national organization for the promotion and improvement of the industry. Officers were appointed to act until the holding of the first annual meeting, which will take place in the near future. The officers are, L. L. Jacobs, president; and A. C. MacKenzie, secretary, both of Toronto.

Brief Items for Plant Operators

ALBERTA PIPE LINE CO. TO BEGIN CONSTRUCTION

CHATHAM, Ontario, Dec. 24.—The Alberta Pipe Line Co. has been incorporated under provincial charter to construct pipe lines within the Province of Alberta with the status of common carriers. It is understood that the Regal Oil & Refining Co., Ltd., which recently established a refining plant at Calgary, is backing the new undertaking, and that the first construction will be an oil line from the Turner Valley Field to the Regal plant at Calgary. This line as planned will cost approximately $150,000, and it is understood that the purchase of the right of way has been practically completed.

The line will handle the crude oil output of the New McDougal-Segur Oil Co. wells in the Turner Valley, and possibly of some of the other independent Dakota sand producers. It will pass within 150 yards of the Anglesey-Lakeview test on the Rowland Ness farm southwest of DeWinton, and it is reported that the company has tentatively arranged to take any production secured by that test. Construction will begin as soon as weather permits in the spring.

In the Irma-Wainwright Field, east of Edmonton, the Edmonton Wainwright Oils, Ltd., is reported selling its heavy crude production to the Price Development & Refining Co.'s new plant at Wainwright.

DEVELOPMENT COMPANY NEW STANDARD UNIT

NEW YORK, Dec. 27.—The Standard Oil Development Co. has been formed to take over the development department and the general engineering department of the Standard Oil Co. of New Jersey. The new company has also taken over the Standard Development Co., a subsidiary company of the Standard Oil Co. of New Jersey, which in the past has carried on the research work for the parent company.

E. M. Clark, formerly vice president in charge of manufacturing for the Standard of New Jersey, has been elected president of the new company. The vice presidents elected are F. A. Howard, C. H. Haupt and C. A. Straw. The work of the new organization will include chemical and physical research, engineering testing, inspection and general technical work. The company will also have charge of all patent and trade-mark work and licensing under company's patent rights.

As the first important activity of the new organization, a research laboratory is being built at Baton Rouge, La., under the direction of Dr. N. E. Loomis. The refinery of the Standard Oil Co. of Louisiana, a subsidiary of the Standard Oil Co. of New Jersey, is located at Baton Rouge.

NEW REFINING ORGANIZATION

CHATHAM, Ontario, Dec. 24.—Following the recent purchase of the McColl Brothers, Ltd., stock, the McColl-Frontenac Oil Co., Ltd., has been incorporated with head office at Montreal, Quebec, to act as a holding company for McColl Brothers, Ltd., and Frontenac Oil Refineries, Ltd. The new company has an authorized capital of $10,000,000 in 6 per cent cumulation sinking fund preferred stock, of which $7,500,000 has been issued and oversubscribed; and 750,000 shares of no par common stock. Under the merger thus affected, two refineries will be operated, one in Toronto and the other in Montreal East, with both rail and water facilities.

The company owns a tank steamer equipped with Diesel engines, tank cars, tank trucks, service stations and distributing depots, and has a marketing system covering eight Canadian provinces. Through ownership of all the capital stock of McColl Brothers, Inc., of Buffalo, N. Y., the company owns lands and storage in that city. It also holds the exclusive right to use the Cyclo-Vapour-Phase process for manufacturing Cyclo gas in Canada. A full line of petroleum products will be refined and marketed.

EASTERN REFINERY FIRE MARSHALS MEET

The annual meeting of the Fire Marshals' Association, an organization affiliated with the National Petroleum Association, will be held at the William Penn Hotel, Pittsburgh, Pa., on January 12, 1928. The meeting is for the purpose of discussing the work of the fire marshals connected with eastern refineries.

James H. Herbert, president of the association will preside at the meetings. Following is the program:

Morning Session, 10 a. m.

A Greeting of Welcome; R. A. Wotowitch, trustee in charge, Department of Welfare and Insurance, National Petroleum Association.

Opening Remarks and Announcements; James H. Herbert.

A Message from the National Petroleum Association; E. M. Lyons, president, National Petroleum Association.

Our Fire Marshals and Their Work; James H. Herbert.

The Organization of Fire Marshals in the Plants; James F. Sweeney, vice president, Fire Marshals Association.

Business Session.

Luncheon, 1 p. m.

Afternoon Session.

Some Advantages of Fire and Accident Prevention, Houston Dunn.

First Aid Training, J. J. Forbes, supervising engineer, Instruction Section, Safety Division, United States Bureau of Mines, Pittsburgh, Pa.

What Fire Marshals Can Do in Accident Prevention, H. N. Blakeslee, field representative, Petroleum Section, National Safety Council.

Reports of Fire Marshals' Groups; James F. Sweeney, Warren, Pa.; Frank Phillipbar, Bradford, Pa.; Wayne K. Glenn, Oil City, Pa.; Mr. Brown, West Virginia.

JAPANESE REFINERIES

F. L. McWatty, New York representative of the Asano Bussan Co., whose headquarters are at Tokio, was in Chicago last week conferring with the management of the Red River Refining Co., owners of the Schulz Vacuum Process. It was through the efforts of the Asano Bussan Co. that the contracts were made with the two leading refining companies of Japan for installing stills of this design. The product is high grade lubricating oils.

REFINERY SHUT DOWN

HOUSTON, Tex., Dec. 24.—Keen & Woolf the past week shut down its lubricating oil refinery at Clinton, on the ship channel southeast of Houston. The shutdown is for an indefinite period but no further details were made public. The plant has a capacity of approximately 2,000 bbls. daily. This is the second Houston refinery to shut down in the past few months, Galena-Signal Oil Co. of Texas plant being the other.

APPLY FOR PATENT

G. L. Rowsey and J. F. Whitehurst, of the Amarillo Refining Co., have made application for patents covering lead sulphide treating in refining. Mr. Rowsey, who is superintendent of the Amarillo, Tex., refinery of the Amarillo Refining Co., and Mr. Whitehurst have been engaged for some time in the development of the treating process. Their first commercial installation was made at the Amarillo refinery.

A description of the process appears on page 250 of this issue.

AMONG THE TECHNICAL MEN

C. B. Faught, superintendent of the Texas Pacific Coal & Oil Co.'s Fort Worth, Tex., refinery, is regarded by friends and associates as one of the best informed technical men on contact treating. At present he is devoting considerable time and effort to that phase of refining and the plant of which he is superintendent is extensively equipped for research in that work.

C. B. Faught

His first experience in contact treating was in Sour Lake, Tex., with Saratoga crude when contacting was in its infancy. The crude itself, as most refiners know, is one of the most difficult to handle. At that time the experimental equipment was inadequate. Since then Mr. Faught has contributed much to the advancement of contact treating. In conjunction with the contact treating developed at the Fort Worth plant the development of a low cold test paraffin base oil, is another of the recent advancements of the Fort Worth refinery.

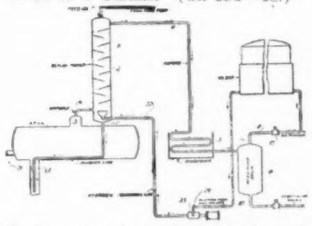
Proponents of greater efficiency of plants as a result of harmonious co-operation among employes would find such a plan working successfully in the Texas Pacific company's plant. Frequent meetings of departmental heads and employes are held and a special effort is made to promote co-operation. Within a short while a series of lectures will be given by various plant men concerning their particular phase of refining.

Mr. Faught was born in Kemp, Tex., in 1897. He studied chemical engineering at Rice Institute in Houston. His first refinery experience was with the Galena Signal Oil Co. at Houston where he was assistant chemist in charge of experimental work. Following that he was with the Sinclair Refining Co. at Houston as chemist. One year of his work was with the Southwestern Refining Co. at Sour Lake and another with the Deepwater Refineries, Inc., at Houston, serving as chief chemist for both concerns.

His connection with the Texas Pacific company dates back a year ago when he came there as assistant superintendent. In September of 1927 he was made plant superintendent.

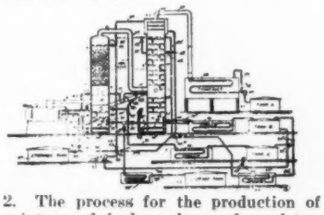
Recent Patents

1,650,519. Art of Cracking Hydrocarbons. Edward W. Isom, Winnetka, Ill., assignor to Sinclair Refining Co., Chicago, Ill., a corporation of Maine. Filed January 28, 1922. Serial No. 532,351. 8 Claims. (Cl. 196—48.)



5. A process for cracking hydrocarbon oils, comprising heating the oil to a cracking temperature under pressure in a still, passing vapors from the still through a reflux tower, feeding fresh stock into the upper end of the tower in direct contact with the vapors therein, introducing a stream of cool hydrocarbon gases into the lower end of the tower in direct contact with the vapors therein, and conveying admixed fresh stock and reflux condensate from the lower end of the tower to the still

1,652,886. Process and Apparatus for Fractionating Hydrocarbon Oils. John C. Black, Destrehan, La. Filed April 5, 1923. Serial No. 630,147. 14 Claims. (Cl. 196—94.)



2. The process for the production of a mixture of hydrocarbons of predetermined boiling point range which comprises preliminary vaporizing mixed hydrocarbons, then partially condensing the vapors in a tower passing the condensates through a cooler and using the cooled condensates to partially condense the residual vapors and finally condensing the ultimate residual vapors.

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Dec. 27		Dec. 20		Dec. 13	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.05⅝		.05⅝		.05⅝	
56-58 450 endpoint	.05⅝		.05⅝		.05⅝	
58-60 450 endpoint	.05⅝	.05¾	.05⅝	.05¾	.05⅝	.05¾
58-60 437 endpoint (U. S. Motor)	.05¾	.06	.05¾	.06	.05⅞	.06⅛
60-62 400 endpoint	.06⅜	.06½	.06⅜	.06½	.06⅜	.06½
64-66 375 endpoint	.06⅞		.06⅞		.06¾	
68-70 360 endpoint	.07⅛		.07⅛		.07⅛	
64-66 437 endpoint (blend)	.05⅞	.06	.05⅞	.06	.06	
KANSAS—						
58-60 437 endpoint (U. S. Motor)	.06⅛	.06¼	.06⅛	.06¼	.06⅛	.06⅜
NORTH TEXAS—						
56-58 450 endpoint	.05⅝		.05⅝		.05⅝	
58-60 450 endpoint	.05⅝		.05⅝		.05⅝	
58-60 437 endpoint (U. S. Motor)	.05¾	.06	.05¾	.06	.05⅞	.06⅛
60-62 400 endpoint	.06⅜	.06½	.06⅜	.06½	.06⅜	.06½
64-66 390 endpoint	.06½	.06⅝	.06½	.06⅝	.06½	.06⅝
64 66 375 endpoint	.06⅞		.06⅞		.06¾	
68-70 360 endpoint	.07	.07⅛	.07	.07⅛	.07	
64-66 437 endpoint (blend)	.05⅞	.06	.05⅞	.06	.06⅛	
NORTH LOUISIANA—						
58-60 437 endpoint (U. S. Motor)	.06½	.06¾	.06½		.06½	
ARKANSAS—						
58-60 437 endpoint (U. S. Motor)	.06⅜	.06⅝	.06⅜		.06½	
PENNSYLVANIA—						
52-54 Naphtha	.07¾	.08	.07¾	.08	.07¾	.08
54-56 Naphtha	.07¾	.08	.07¾	.08	.07¾	.08
58-60 Gasoline	.08	.08¼	.08	.08¼	.08	.08¼
60 Gasoline	.08¾	.09	.08¾	.09	.08¾	.09
62 Gasoline	.09¼	.09¼	.09¼	.09½	.09⅛	.09¼
64 Gasoline	.09¼	.09½	.09¼	.09½	.09¼	.09½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.10	.10¼	.10	.10¼
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.05¾		.05¾		.05⅝	.05⅞
56-58 450 endpoint	.05¾		.05¾		.05¾	.05⅞
58-60 437 endpoint (U. S. Motor)	.05¾	.06	.05¾	.06	.05¾	.06
60-62 400 endpoint	.06⅜	.06½	.06⅜	.06½	.06½	
64-66 475 endpoint	.06⅞	.07	.06⅞	.07	.06¾	.07
68-70 360 endpoint	.07⅛	.07⅜	.07⅛	.07⅜	.07¼	.07⅜
64-66 437 endpoint (blend)	.06	.06¼	.06	.06⅛	.06	.06⅛

NATURAL GASOLINE

	Dec. 27		Dec. 20		Dec. 13	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05¼		.05⅛	.05¼	.05⅜	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04⅞	.05	.04⅞		.05⅛	
Grade B, 76-83.9, 375 e.p., rec. 85%	.04¼		.04¼	.04½	.04¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.04	.04⅛	.04⅛		.04¼	
Grade C, 80-92, 375 e.p., rec. 78%	.03½		.03⅞	.04	.04	
NORTH TEXAS—						
Grade A, 72-79 9, 375 e.p., rec. 90%	.05¼		.05⅛		.05⅜	
Grade AA, 80-87.9, 375 e p., rec. 90%	.04⅞		.04⅞	.05	.05	.05⅛
Grade B, 76-83.9, 375 e.p., rec. 85%	.04⅛	.04¼	.04⅛		.04¼	
Grade BB, 84 92, 375 e.p., rec. 85%	.04	.04⅛	.04⅛		.04¼	
Grade C, 80-92, 375 e.p., rec. 78%	.03½	.03⅝	.03¼		.04	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.05¼		.05¼		.05½	
Grade BB, 84-92, 375 e.p., rec. 85%	.05⅛		.05⅛		.05¼	
Grade C, 80-92, 375 e.p., rec. 78%	.04¾		.04¾	.04⅞	.05	
CALIFORNIA—						
75-85, 375, 390 endpoint	.08½	.09	.08½	.09	.08½	.09
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e p., rec. 90%	.05¼	.05⅜	.05⅛		.05¼	.05⅜
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04⅞		.04⅞		.05⅛	
Grade B, 76-83.9, 375 e.p., rec. 85%	.04¼		.04⅛		.04¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.04	.04¼	.04⅛		.04¼	
Grade C, 80-90, 375 e.p., rec. 78%	.03½		.03¾		.04	

Note: All natural gasoline, except California, is noncorrosive.

BURNING OIL

	Dec. 27		Dec. 20		Dec. 13	
KANSAS—						
41-43 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04⅝	.04¾
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04¼	.04½	.04¼	.04½	.04⅜	.04½
42-44 water white Kerosene	.04¾	.05	.04¾	.05	.05	
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05		.05		.05	.05¼
NORTH TEXAS—						
41-43 water white Kerosene	.04¼	.04½	.04¼	.04½	.04⅜	.04½
40-42 water white Kerosene	.04⅛	.04¼	.04⅛	.04¼	.04¼	
ARKANSAS—						
41-43 water white Kerosene	.05		.05		.05	
PENNSYLVANIA—						
43 Kerosene prime white	.06⅛	.06⅜	.06⅛	.06⅜	.06⅛	.06⅜
45 Kerosene water white	.06¼	.06½	.06¼	.06½	.06¼	.06½
46 Kerosene water white	.06½	.06⅝	.06½	.06⅝	.06½	.06⅝
47 Kerosene water white	.07	.07¼	.07	.07¼	.07	.07¼
300 Mineral Seal	.07¼	.07½	.07¼	.07½	.07¼	.07½
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.05½	.06	.05½	.06	.05½	.06
Engine distillate, 43-45, 445 endpoint	.07	.07¾	.07	.07¾	.07	.07¾
Engine distillate, 42-44, 480 endpoint	.06¾	.07	.06¾	.07	.06¾	.07
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.04⅜	.04½	.04⅜	.04½	.04½	.04⅝
42-44 water white Kerosene	.04¾	.05	.04¾	.05	.05	.05⅛

FUEL OILS

	Dec. 27		Dec. 20		Dec. 13	
KANSAS—						
22-26 Fuel Oil	.80	.85	.80	.85	.80	.85
18-22 Fuel Oil	.80		.80		.80	
32-36 Gas Oil	.02½		.02½		.02½	
38-40 Distillate	.03¼	.03⅜	.03¼	.03⅜	.03¼	.03⅜
OKLAHOMA (Group 3)—						
Below 18 Fuel Oil	.70	.75	.70	.75	.70	.75
18-22 Fuel Oil	.75	.77½	.75	.77½	.75	.77½
22-26 Fuel Oil	.77½	.80	.77½	.80	.77½	.80
24-26 Fuel Oil	.80	.85	.80	.85	.80	.85
26-30 Fuel Oil	.85	.87½	.85	.87½	.85	.87½
28-30 Fuel Oil	.90	.95	.90	.95	.90	.95
32-36 Gas Oil (dark)	.02¼	.02⅜	.02¼	.02⅜	.02¼	.02⅜
32-36 Gas Oil (straw overhead)	.02⅜	.02½	.02⅜	.02½	.02⅜	.02½
36-38 Distillate	.03	.03¼	.03	.03¼	.03	.03¼
38-40 Straw Distillate	.03	.03½	.03⅛	.03¼	.03⅛	.03¼
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	.75	.80	.75	.80	.75	.80
32-36 Gas Oil (straw)	.02¼		.02¼		.02¼	
38-40 Straw Distillate	.03		.03		.03	
NORTH LOUISIANA—						
18-20 Fuel Oil	1.00		1.00		1.00	
32-36 Gas Oil	.03	.03¼	.03	.03¼	.03	.03¼
ARKANSAS—						
33-36 Distillate	.03½	.03¾	.03½	.03¾	.03½	.03¾
32-36 Gas Oil (straw)	.02¾		.02¾		.03	.03¼
16-20 Refinery Fuel Oil	.95		.95		.95	1.00
GULF COAST (South Texas)—						
Gas Oil	.03⅞	.04	.03⅞	.04	.03⅞	.04
Fuel Oil	1.25	1.30	1.25	1.30	1.25	1.30
PENNSYLVANIA—						
30-34 Fuel Oil	.04¼	.04⅝	.04¼	.04⅝	.04¼	.04⅝
36-40 Fuel Oil	.04⅜	.04⅝	.04⅜	.04⅝	.04⅜	.04⅝
CALIFORNIA—						
33 36 Distillate	.03¼	.03¾	.03½	.03¾	.03¼	.03¾
27-32 Distillate	.02¼	.03	.02¼	.03	.02¼	.03
*15-20 Fuel Oil, Bunkers (at tide water)	1.00		1.00		1.00	
15-20 Fuel Oil (cargo lots)	.90		.90		.90	
27 plus Diesel	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars) Group 3	.80	.82½	.80	.82½	.80	.82½
22-26 Fuel Oil (sellers' cars) Group 3	.77½	.80	.77½	.80	.77½	.80
18-22 (Group 3)	.75	.77½	.75	.77½	.75	.77½
16-20 Smackover	1.00		1.00		1.00	
32-36 Gas Oil (zero)	.02¾	.02⅞	.02¾	.02⅞	.02¾	.02⅞
32-36 Gas Oil (industrial)	.02½		.02½		.02½	
36-38 Distillate	.03⅛		.03⅛		.03⅛	
38 40 Straw Distillate	.03¼	.03⅜	.03¼	.03⅜	.03¼	.03⅜

*Bunkers.

LUBRICATING OIL AND WAX

	Dec. 27		Dec. 20		Dec. 13	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06¼	.06½	.06¼	.06½	.06¼	.06½
100 vis., 3 color, 20-25 cold test	.06	.06¼	.06	.06¼	.06	.06¼
150 vis., 3 color, 20-25 cold test	.08¼	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.08	.08¼	*08	.08¼	.08	.08¼
180 vis., 3 color, 23-28 cold test	.09⅜	.10	.09⅜	.10	.09⅜	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09⅜	.09¼	.09⅜	.09¼	.09⅜
180 vis., 5 color, 23-28 cold test	.09⅜	.09½	.09⅜	.08½	.09⅜	.09½
200 vis., 3 color, 23-28 cold test	.09½	.10½	.09½	.10½	.09½	.10½
200 vis., 4 color, 23-28 cold test	.09⅜	.10¼	.09⅜	.10¼	.09⅜	.10¼
200 vis., 5 color, 23-28 cold test	.09¼	.10	.09¼	.10	.09¼	.10
240 vis , 3 color, 25-30 cold test	.13¾	.14	.13¾	.14	.13⅜	.14
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 5 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
280 vis., 3 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 4 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15¼
280 vis., 5 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
Cylinder Stocks:						
600, steam refined, light green	.08	.09½	.08	.09½	.08	.09½
600, steam refined, dark green	.07	.07½	.07	.07½	.07	.07½
190-200 vis. @ 210 Bright Stock	.30	.32	.30	.32	.30	.32
150-160 vis. @ 210 Bright Stock	.24	.25	.24	.25	.24	.25
Waxes:						
124-126 White Crude Scale Wax	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom	.07¾	.08	.07¾	.08	.07¾	.08
36 Miners' Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
150, 3 color	.26½	.27	.26½	.27	.26½	.27
180, 3 color	.31	.31½	.31	.31½	.31	.31½
200, 3 color	.32	.32½	.32	.32½	.32	.32½
220, 3 color	.34½	.35	.34½	.35	.34½	.35
600, steam refined	.09¼	.09¾	.09¼	.09¾	.09¼	.09¾
635, steam refined	.10½	.11	.10½	.11	.10½	.11
650, steam refined	.11¼	.11¾	.11¼	.11¾	.11¼	.11¾
600, Pennsylvania flash	.15	.16	.15	.16	.15	.16
*550, E filtered	.15¾	.16	.15¾	.16	.15¾	.16
*600, E filtered	.16½	.17	.16½	.17	.16½	.17
600, E filtered	.15½	.16	.15½	.16	.15½	.16
600, D filtered	.24½	.25	.24½	.25	.24½	.25
550, E filtered	.15½	.16	.15½	.16	.15½	.16
550, D filtered	.21½	.22	.21½	.22	.21½	.22
Pennsylvania Bright Stock	.28	.28½	.28	.28½	.28	.28½
†122-124 White Crude Scale Wax	.02⅞	.03	.02⅞	.03	.02⅞	.03
124-126 White Crude Scale Wax	.02⅞	.03	.02⅞	.03	.02⅞	.03

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.06¼	.07	.06¼	.07	.06¼	.07
No. 3 color, 200 vis., pale oil	.08¾	.09	.08¾	.09	.08¾	.09
No. 3 color, 300 vis., pale oil	.10	.10½	.10	.10½	.10	.10½
No. 3½ color, 500 vis., pale oil	.11½	.12	.11½	.12	.11½	.12
No. 4 color, 750 vis., pale oil	.14	.14½	.14	.14½	.14	.14½
No. 5 to 6 color, 200 vis., red oil	.07½	.08	.07½	.08	.07½	.08
No. 5 to 6 color, 300 vis., red oil	.08½	.09	.08½	.09	.08½	.09
No. 5 to 6 color, 500 vis., red oil	.09½	.10½	.09½	.10½	.09½	.10½
No. 5 to 6 color, 750 vis., red oil	.12	.12½	.12	.12½	.12	.12½
No. 2 color, 200 vis., pale filtered	.11½	.12½	.11½	.12½	.11½	.12½
No. 2 color, 300 vis., pale filtered	.13	.13½	.13	.13½	.13	.13½
No. 2½ color, 500 vis., pale filtered	.14	.14½	.14	.14½	.14	.14½
No. 2½ color, 750 vis., pale filtered	.17½	.19	.17½	.19	.17½	.19

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

CALIFORNIA—						
130 vis., 2½-3 color	.09	.10	.09	.10	.09	.10
200 vis., 2½-3 color	.10	.10½	.10	.10½	.10	.10½
300 vis., 3-3½ color	.10½	.11	.10½	.11	.10½	.11
350 vis., 3½-4 color	.11	.12	.11	.12	.11	.12
400 vis., 3½-4 color	.13	.14	.13	.14	.13	.14
Red Neutral:						
200 vis., 4½-5 color	.08½	.09	.08½	.09	.08½	.09
300 vis., 5-6 color	.09	.09½	.09	.09½	.09	.09½
400 vis., 5-6 color	.11	.11½	.11	.11½	.11	.11½
500 vis., 4½-5 color	.11¼	.12	.11¼	.12	.11¼	.12
500 vis., 5-6½ color	.11	.11½	.11	.11½	.11	.11½
600 vis., 6 plus color	.12	.12½	.12	.12½	.12	.12½

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Dec. 27	Dec. 20	Dec. 12
Gasoline, U. S. Motor, 58-60 437	.08¼	.08¼	.08¼
Kerosene, water white, 41-43	.07½	.07½	.07½
*Fuel Oil, bunker "C," 14-16, per bbl.	1.35	1.35	1.35
*Fuel Oil, Diesel, 28-30, per bbl.	2.10	2.10	2.10
Gas Oil, 28 plus	.05½	.05½	.05½
25 pale Paraffin Oil	.12	.12	.12
28 pale Paraffin Oil	.07	.07	.07
28 red Paraffin Oil	.11½	.11½	.11½
250 red Paraffin Oil	.10½	.10½	.10½
225 red Paraffin Oil	.09½	.09½	.09½
200 red Paraffin Oil	.09	.09	.09
Refined Wax:			
120-122 a.m.p., per lb.	.03⅞	.03⅞	.03⅞
125-127 a.m.p., per lb.	.03⅞	.03⅞	.03⅞
130-132 a.m.p., per lb.	.04½	.04½	.04½
135-137 a.m.p., per lb.	.05¼	.05¼	.05¼
Petrolatum, in bbls., carload lots, per lb.:			
Dark green	.01⅞	.01⅞	.01⅞
Amber	.03¾	.03¾	.03¾
Extra amber	.03¾	.03¾	.03¾
Cream	.06½	.06½	.06½
Snow white	.08		
Lily white	.08½	.08½	.08½

*Lighterage 6.5c a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Dec. 27	Dec. 20	Dec. 13
Gasoline, U. S. Motor, 58-60 437, in cases	.2390	.2390	.2390
Kerosene, standard white, in cases	.1715	.1715	.1715
Kerosene, water white, in cases	.1815	.1815	.1815
600 steam refined cylinder stock, in bbls.	.17	.17	.17
635 steam refined	.19	.19	.19
650 steam refined	.20	.20	.20
600 Pennsylvania flash	.23	.23	.23
630 Pennsylvania flash	.35	.35	.35
600 Warren E	.25	.25	.25
600 Oil City E	.24	.24	.24
Light 135 Bright Stock	.40	.40	.40
Dark 135 Bright Stock	.38	.38	.38

LOS ANGELES EXPORT PRICES

	Dec. 27		Dec. 20		Dec. 13	
Kerosene, water white	.04¾	.05	.04½	.04¾	.04½	.04¾
U. S. Motor Gasoline, 53-55 437 endpoint	.06	.06⅛	.06	.06⅛	.06	.06⅛

CALIFORNIA CRUDE PRICES

Standard Oil Co.-Union Oil Co. (Effective April 1, 1927)*

Gravity—	Fullerton, Seal Beach, Long Beach, Huntington Beach, Richfield, Rosecrans-Dominguez, Torrance-Inglewood 1	Whittier, La Habra, Montebello 2	Kern River, Newhall-McKittrick, Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills, Coyote 3 4	Santa Fe Springs 5	Coalinga 6	Wheeler Ridge 7	Santa Maria, Ventura, Orcutt, Salt Lake 8
14°	.85	.85	.75 .85	....	.75	.75	.85
15°	.85	.85	.75 .85	....	.75	.75	.85
16°	.85	.85	.75 .85	....	.75	.75	.85
17°	.85	.85	.75 .85	....	.75	.75	.85
18°	.85	.85	.75 .85	....	.75	.75	.85
19°	.85	.85	.75 .85	....	.75	.75	.85
20°	.85	.85	.77 .85	....	.76	.76	.85
21°	.86	.85	.79 .86	.85	.77	.77	.85
22°	.87	.85	.81 .87	.85	.78	.78	.85
23°	.88	.85	.83 .88	.85	.79	.79	.85
24°	.89	.85	.85 .89	.85	.80	.80	.85
25°	.90	.86	.87 .90	.86	.81	.81	.86
26°	.92	.87	.89 .91	.87	.83	.82	.87
27°	.94	.88	.91 .92	.88	.85	.83	.88
28°	.96	.89	.93 .93	.89	.87	....	.89
29°	.98	.90	.96 .94	.91	.89	....	.91
30°	1.00	.91	.99 .95	.93	.91	....	.93
31°	1.03	....	1.02	.95	.93	....	.95
32°	1.06	....	1.05	.97	.95	....	.97
33°	1.09	....	1.08	.99	.97	....	.99
34°	1.12	....	1.11	1.01	.99	....	1.01
35°	1.15	....	....	1.03	1.01	....	1.03
36°	1.18	....	....	1.06	....	....	1.06
37°	1.21	....	....	1.09	....	....	1.09
38°	1.24	....	....	1.12	....	....	1.12
39°	1.27	....	....	1.15	....	....	1.15
40°	1.30	....	....	....	....	....	....
41°	1.33	....	....	....	....	....	....
42°	1.36	....	....	....	....	....	....

*Column 1—Long Beach, Seal Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Fullerton, 14 to 30 degrees; Torrance and Inglewood, 14 to 28 degrees; Dominguez, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.

Column 2—Whittier crude, 14 to 22 degrees; Montebello, 14 to 30 degrees.

Column 3—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset, Buena Vista and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 34 degrees.

Column 8—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura and Orcutt, 14 to 39 degrees. Posted only by Union Oil Co.

CRUDE OIL GRAVITY TABLE

Gravity—	Okla., Kans., N. C. Tex., La.-Ark. 1	Smackover, Ark. 2	Stephens, Ark. 3	Gray County (Texas Panhandle) 4	Crane, Upton, Pecos, Crockett Counties (West Texas) 5	Salt Creek, Wyo. 6	Grade B & Light Crude (G. Coast) 7	Somerset (South Central Texas) 8
Below 24	....	.85	....	....	....	....	....	....
24 and above	....	1.00	....	....	....	....	....	....
Below 25	....	....	....	....	....	....	1.16	....
25 to 25.9	....	....	....	....	....	....	1.17	....
Below 26	....	....	....	....	.60	....	....	....
26 to 26.9	....	....	....	....	.60	....	1.19	....
27 to 27.9	....	....	....	....	.60	....	1.21	....
Below 28	....	....	1.00	....	....	....	....	....
28 to 28.9	1.12	....	1.02	.80	.60	....	1.23	....
29 to 29.9	1.14	....	1.04	.82	.60	1.14	1.25	....
30 to 30.9	1.16	....	1.06	.84	.60	1.16	1.27	....
31 to 31.9	1.18	....	1.08	.86	.60	1.18	1.29	....
32 to 32.9	1.20	....	1.10	.88	.60	1.20	1.31	1.05
33 to 33.9	1.22	....	....	.90	.60	1.22	1.33	1.07
34 to 34.9	1.24	....	....	.92	.60	1.24	1.35	1.09
35 to 35.9	1.26	....	....	.94	.60	1.26	1.37	1.11
36 to 36.9	1.28	....	....	.96	.60	1.28	....	1.13
37 to 37.9	1.30	....	....	.98	....	1.30	....	1.15
38 to 38.9	1.32	....	....	1.00	....	....	....	1.17
39 to 39.9	1.34	....	....	1.02	....	....	....	....
40 to 40.9	1.36	....	....	1.04	....	....	....	....
41 to 41.9	1.38	....	....	1.06	....	....	....	....
42 to 42.9	1.40	....	....	1.08	....	....	....	....
43 to 43.9	1.42	....	....	1.10	....	....	....	....
44 to 44.9	1.44	....	....	1.12	....	....	....	....
45 to 45.9	1.46	....	....	....	....	....	....	....
46 to 46.9	1.48	....	....	....	....	....	....	....
47 to 47.9	1.50	....	....	....	....	....	....	....
48 to 48.9	1.52	....	....	....	....	....	....	....
49 to 49.9	1.54	....	....	....	....	....	....	....
50 to 50.9	1.56	....	....	....	....	....	....	....
51 to 51.9	1.58	....	....	....	....	....	....	....
52 and above	1.60	....	....	....	....	....	....	....

Column 1—Magnolia Petroleum Co. posted new schedule September 14, making price below 30 gravity $1.05 per barrel, with 2 cents increase per degree higher in gravity, taking 30-30.9 gravity at $1.16 as basis, with a top price of $1.60 for 52 and above.

Oklahoma—Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., March 12; Carter Oil Co., The Texas Company, March 14.

North Central Texas—[Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs (Southwest Texas), Iatan and Panola (Magnolia only), Currie, Nocona, Moran and Corsicana light]; Texas, Prairie, Sinclair and Gulf, March 12; The Texas Company, Humble Oil & Refining Co., March 14.

Kansas—Prairie, Sinclair, March 12; Carter, Texas, March 14.

Arkansas and North Louisiana—(Caddo, Bull Bayou, Crichton, De Soto, Haynesville, Homer and El Dorado only]; Standard Oil Co. of Louisiana, March 14; The Texas Company, March 14; Magnolia Petroleum Co., Pine Island, Haynesville and Bull Bayou, El Dorado, Gulf Pipe Line Co., March 14.

Column 2—November 19, Louisiana Oil & Refining Co. On November 31, Standard Oil Co. of Louisiana, Magnolia Petroleum Co., Gulf Refining Co., and Atlantic Producing Co.

Column 3—Atlantic Oil Producing Co., March 14.

Column 4—Humble Oil & Refining Co. and Gulf Pipe Line Co., March 14. On August 23 Magnolia Petroleum Co. posted flat 75 cents.

Column 5—Humble Oil & Refining Co., August 23; Kay County Gas Co., Magnolia Petroleum Co., and Gulf Pipe Line Co., August 24.

Column 6—Midwest Refining Co., March 12. All crude over 37 gravity, $1.30 per barrel.

Column 7—Humble Oil & Refining Co. and other major buyers (schedule ends "35 and above"), March 14, with exception of Magnolia Petroleum Co., which stops at 31 degrees gravity. Sun Pipe Line Co. posts 2 cents differential for each degree above 35 gravity and $1.47 for 40 gravity and above.

Column 8—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

*Prices for crude below 28 gravity; Oklahoma, Kansas and Texas, Magnolia Petroleum Co., $1.10, March 12; Arkansas, North Louisiana, March 14. Other companies, 2 cents less for each degree, with exception of Humble Oil & Refining Co., which pays 90 cents for crude below 25 degrees gravity, effective November 16.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

*Corsicana heavy (March 14, 1927).....$1.00
Other fields.....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

*Carson County.....$ .75
*Hutchinson County.....75
*Wheeler County.....75
Gray County.....See gravity table

*Humble Oil & Refining Co.
Magnolia Petroleum Co., Gulf Pipe Line Co., and Kay County Gas Co., August 23.

*Iatan.....Same as North Texas
Crane-Upton-Crockett.....See gravity table
†Glasscock.....$ .80

*Includes Howard County and Westbrook Fields. Kay County Gas Co. pays $1.05 for Howard County crude, effective May 21.
†Magnolia Petroleum Co., Oct. 24.

ARKANSAS-NORTH LOUISIANA

Cotton Valley (Dec. 2).....$ .85
Bellevue (Feb. 24, 1927).....1.25
Urania (Nov. 18, 1927).....75
East El Dorado (Sept. 20).....90
Other fields.....See gravity table

Note—Cotton Valley and Bellevue, Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co. and Magnolia Petroleum Co.; Urania, Louisiana Oil Refining Corp.; East El Dorado Magnolia Petroleum Co., Gulf Refining Co.

GULF COAST

(Goose Creek, Hull, Liberty, West Columbia, Orange, Boling, Sour Lake, Humble, High Island, Pierce Junction and Spindletop.)
‡Grade A (March 14).....$1.20
Grade B.....See gravity table
*Jennings, La. (March 14).....$1.05
†Saratoga, Batson, Dayton (March 14, 1927).....$1.20
§Markham (March 14).....1.00

*Gulf Pipe Line Co. †Sun Pipe Line Co. ‡Humble Oil & Refining Co. and other major buyers. §The Texas Company.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

*Luling (May 5).....$1.00
†Mirando (March 14).....1.00
Rockdale-Minerva (April 15):
38-38.9 gravity.....1.27
39-39.9 gravity.....1.29
40 and above.....1.31
*Thrall.....
Callihan (May 15).....1.75
Lytton Springs (Lockhart) See gravity table
Somerset.....See gravity table

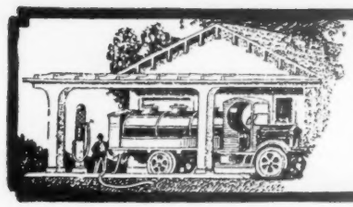
*Posted by Magnolia Petroleum Co. Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.
(Effective March 14)

Rock Creek, Wyo (March 12).....$1.25
Salt Creek.....See gravity table
Big Muddy (March 12).....$1.25
Mule Creek (May 1).....1.10
Grass Creek, heavy.....90
Grass Creek, light.....1.33
Elk Basin (March 12).....1.33
Lance Creek (March 12).....1.33
Poison Spider.....1.00
Notches.....65
Rex Lake (February 22).....1.10
Osage.....1.33
Lost Soldier (contract).....95
Greybull-Torchlight.....1.33
Hamilton Dome.....85
Cat Creek (Mont.).....1.33
Sunburst (Mont.).....1.35

(Continued on Page 238)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Dec. 27.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Chicago dist.	16.0	18 0	2 0	12 0
Decatur, Ill.	13 5	15 5	2 0	12.1
E. St. Louis	15 1	17 35	2 0	11 2
Joliet	16.4	18.4	2 0	12.3
Peoria	12 2	12 2	2 0	12.1
Quincy	16 2	18 2	2.0	11 9
Davenport, Ia.	15 5	17 5	3.0	12 3
Des Moines	14.9	16.9	3.0	12.3
Keokuk	17 5	19.5	3 0	12 3
Sioux City	17 1	19 1	3.0	11 9
Duluth, Minn.	15 5	17 5	2 0	12.9
Minneapolis	14 0	14.0	2 0	12 9
Mankato	14.1	16 1	2 0	12 7
LaCross, Wis.	17.2	19 2	2 0	13.0
Milwaukee	16 1	18 1	2.0	11 9
Madison	16 3	18 3	2.0	12 1
Detroit, Mich.	15 8	17.8	3.0	13 7
Grand Rapids	14 0	16.0	3.0	13 6
Saginaw	17 9	19.9	3.0	13 8
Evansville, Ind.	17 0	19 0	3 0	13 0
Ft. Wayne	14 0	14 0	3.0	13 4
Indianapolis	14 2	15 2	3.0	12.2
South Bend	17 4	17.4	3 0	13.4
Fargo, N. D.	15 0	17.0	2 0	14 9
Huron, S. D.	19.5	21 5	4.0	13 9
Sioux Falls	15.0	17.0	4 0	13 4
*K. C., Mo.	14 9	16.9	3 0	10 6
*Springfield	16 8	18 8	3 0	11 5
*St. Louis	15 6	17 9	2.5	11.3
*St. Joseph	14 5	16 5	3.0	11.2
Wichita, Kans.	14 8	16 8	2 0	10.8
Bartlesville, Ok.	15 8	17.8	3 0	10 8

NAPHTHAS

	Tank wagon	Tank car
Oleum spirits	16 0	10 75
V. M. & P. naphtha	18.0	12 75
Cleaner's naphtha	18 0	13.75
Stanisol	19.0	...

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9 0
100 to 799 gallons	8 0
800 or more gallons	7 5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

Tank wagon prices of gasoline subject to discount of 1 cent a gallon on dumps of 50 gallons or more throughout territory except Chicago district where discount applies only to dumps of 100 gallons. Kerosene subject to 1 cent discount on dumps of 50 gallons or more.

Outside the Chicago district, the following quantity discount schedule is in effect on monthly tank wagon deliveries of gasoline; 6,000 gallons or more, 1½ cents; 10,000 gallons or more, 2 cents; 15,000 gallons or more, 3 cents. These discounts include the 1 cent allowed on dumps of 50 gallons or more at one delivery.

Within the Chicago district, the following quantity discount schedule is in effect on tank wagon deliveries of gasoline; 750 to 2,000 gallons, one-half cent; 2,000 to 3,000 gallons, three-fourths cent; 3,000 to 6,000 gallons, 1 cent; 6,000 to 10,000 gallons, 1½ cents; 10,000 to 15,000 gallons, 2 cents; 15,000 gallons or more, 3 cents. These discounts are in addition to the special discount of 1 cent on dumps of 100 gallons or more at one delivery.

If the quantity bought during the year is equal to or exceeds 12 times the agreed monthly quantity, the discount is paid or credited on the entire quantity at the close of the term less the monthly payments made during the year.

*State tax 2 cents; remainder city tax.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
All Ohio points	17.0	19.0	3 0	14.5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.*

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Dallas, Tex.	14.0	17.0	3.0	11 0
Fort Worth	14.0	16 0	3.0	10 0
Houston	13 0	15.0	3.0	15.0
San Antonio	13 0	15.0	3.0	10 0
El Paso	14 0	15.0	3.0	16.0
Texarkana	15.0	18 0	3.0	12 0
Muskogee, Ok.	15.0	18 0	3.0	10.0
Okla. City	13.0	14.0	3.0	10 0
Tulsa	13.0	14.0	3.0	10 0
Ft. Smith, Ark.	14.0	17.0	5.0	12.0
Little Rock	16.0	16.0	5.0	12.0

*The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, one-half cent; over 2,000 gallons, three-quarters cent; over 3,000 gallons, 1 cent; over 4,500 gallons, 1¼ cents; over 6,000 gallons, 1½ cents; over 8,000 gallons, 1¾ cents; over 10,000 gallons, 2 cents. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1 cent; over 300 gallons a month, 1¼ cents; over 400 gallons, 1½ cents; over 500 gallons a month, 1¾ cents; over 600 gallons, 2 cents. The same rule applies for annual purchases in the tank wagon discounts.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
*N. Orleans, La.	15.5	17 5	3 0	14.0
Baton Rouge	14 0	17 0	2.0	12 5
Alexandria	15 0	18.0	2 0	14 0
LaFayette	15 0	18.0	2.0	13 5
Lake Charles	15 5	18 5	2 0	14 0
Shreveport	15 5	18 5	2.0	13 0
Kn'xville, T'nn.	19.5	22.5	3 0	15 0
Memphis	15.0	16 5	3 0	14.0
Chattanooga	19.5	22.5	3 0	15.0
Nashville	18 0	21 0	3 0	15.6
Bristol	19 0	22 0	3 0	14 0
Lit. Rock, Ark.	16.0	16.0	5.0	12 0

*Tax of 3 cents includes city tax of 1 cent. *Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Atlanta, Ga.	17.0	19.0	4.0	14.0
Augusta	19.0	22 0	4 0	16 5
Macon	19.0	22.0	4.0	13.5
Savannah	17 0	19 0	4 0	14.5
Birm'h'm, Ala.	18.0	21 0	4.0	15.5
Mobile	17 0	20 0	4 0	15 0
Montgomery	19 0	22.0	5 0	16 5
Clarks'le, Miss.	17 0	20 0	4.0	12 5
Jackson	17 0	20 0	4 0	13.5
Natchez	16.5	19 5	4.0	14 0
Gulfport	18 5	21 5	6 0	14 0
Vicksburg	16 5	19.5	4 0	14 0
Jack'ville, Fla.	18.0	21.0	5.0	11.5
Miami	20.0	23 0	5.0	15 5
Pensacola	19 0	22.0	5.0	14.0
Tampa	18 0	21 0	5.0	14 0
Lexington, Ky.	18 0	21.0	5.0	15 5
Covington	19.0	22 0	5.0	15 5
Louisville	18.0	21.0	5.0	15.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline. Kerosene prices in Georgia includes 1 cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene only. Pensacola tax includes 1 cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Pittsburgh, Pa.	16 0	*22 0	...	14 0
Philadelphia	15.0	21.0	...	14.0
Scranton	16 0	*22 0	...	14.0
Allentown	16 0	*22.0	...	14 0
Altoona	16.0	*22 0	...	14.0
Erie	12 0	*18.0	...	14 0
Dover, Del.	19 0	22 0	3.0	14 0
Wilmington	19.0	22 0	3.0	14.0
Spring'd, Mass.	18 0	18 0	...	15.0
Worchester	17.0	17.0	...	15.0
Boston	17 0	17.0	...	15.0
Providence, R.I.	19.0	19 0	2.0	15 0
Hartford, Conn.	20.0	20.0	3.0	15.0
New Haven	20 0	20.0	3.0	15.0

*Includes tax of 3.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the state.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Albany, N. Y.	17.0	19.0	...	15.0
*New York	17.0	19.0	...	15.0
Buffalo	17.0	19.0	...	14.0
Rochester	13.0	16.0	...	14.0
Syracuse	17.0	19.0	...	15.0
Boston, Mass.	17.0	19.0	...	15.0
Augusta, Me.	21.0	23.0	4.0	15.0
M'nch't'r, N.H.	18.0	22.0	3.0	15.0
Burlington, Vt.	20.0	22.0	3.0	15.0

*Price in steel barrels.

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
San Francisco	17.0	21.0	3.0	15.5
Pueblo	18.0	18.0	3.0	15.5
Los Angeles	16.5	20.5	3.0	15.5
Reno, Nev.	22.0	26.0	4.0	19.0
Portland, Ore.	17.5	21.5	3.0	16.5
Seattle, Wash.	16.5	20.5	2.0	16.5
Tacoma	16.5	20.5	2.0	16.5
Spokane	20.5	24.5	2.0	20.5
Phoenix, Ariz.	22.0	26.0	3.0	20.5

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Atlantic City	18.0	20 0	2 0	14.0
Newark, N. J.	18 0	20 0	2 0	14.0
Annapolis, Md.	20.0	23 0	4 0	12.0
Baltimore	20.0	23 0	4 0	10 0
Cumberland	20 0	23 0	4 0	14.0
Washington	18.0	21 0	2.0	12 0
Danville, Va.	20.5	....	4 5	14.0
Norfolk	20.5	23 5	4.5	12.0
Petersburg	20 5	23.5	4.5	14.0
Roanoke	20.5	23.5	4.5	14.0
Richmond	18.5	21 5	4.5	14 0
Ch'rslt'n, W.Va.	20 0	23.0	4 0	14 0
Keyser	20 0	....	4.0	14.0
Parkersburg	17 0	20.0	4 0	14.0
Wheeling	20 0	23.0	4 0	14.0
Charlotte, N. C.	20 0	23.0	4.0	14.0
Hickory	20.0	23 0	4.0	14.0
Mt. Airy	20 0	23 0	4.0	14 0
Salisbury	20 0	23 0	4 0	14 0
Charlst'n, S. C.	20 0	23 0	5 0	14 0
Columbia	20.0	20 0	5.0	14.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Omaha	14.25	16 26	2 0	12.25
McCook	14 75	14 75	2 0	11.50
Norfolk	16 75	18 75	2 0	12 75
N. Platte	17.75	19 75	2.0	13 50
Scottsbluff	17.25	19 25	2.0	13 00

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Denver, Colo.	16.0	16 0	3 0	12.5
Pueblo	15 0	15 0	3 0	14.5
Grand Jnctn.	20.5	22.5	3 0	18.0
Casper, Wyo.	17 0	19 0	3 0	13 0
Cheyenne	18 0	20 0	3.0	14.5
Butte, Mont.	22.0	22 0	3.0	19.0
Helena	22.5	24 5	3.0	19.6
Salt L'ke, Utah	20 0	21 0	3.5	17.0
Boise, Idaho	23.5	25 5	4 0	19.0
Twin Falls	23 5	25 5	4 0	19.0
Albu'que, N. M.	21 0	24.0	5.0	17.0

TANK WAGON CHANGES

December 13—Standard Oil Co. of Indiana increased the gasoline tank wagon and station prices 3 cents at Decatur, Ill., making them 13.5 and 15.5 cents. They also decreased the gasoline tank wagon and station prices to 12.8 cents in Wichita, Kans.

December 22—Standard Oil Co. of Indiana increased the gasoline tank wagon and station prices 1 cent in Des Moines, Iowa, to 15.9 and 17.9 cents.

December 23—Standard Oil Co. of Indiana increased the gasoline tank wagon and station prices at Fort Wayne, Ind., to 16.4 cents and 17.4 cents respectively.

Domestic Outlets For Wax Increase; Exports Decline

Low wax prices during 1927 have not served to increase materially the outlet for that product as shown by the Bureau of Mines' figures covering the first 10 months of this year. Over this period the average refinery price in the Mid-Continent for the 124-126 M. P. grade has been $.0311 per pound, while the average last year was $.0471 and for 1925 was $.0516. The total consumption (domestic demand plus exports) over the first 10 months, has increased approximately 5 per cent from an average of 48,905,000 pounds per month in 1926 to 51,255,000 pounds in 1927.

The exports of wax has been the greatest factor in the market of the past but the domestic market is gradually increasing and promises to become a greater factor than exports within a short time. During the first 10 months of 1927 the average exports per month amounts to 27,622,000 pounds which is slightly lower than the average of 27,875,000 pounds for 1926. In addition the imports of wax into the United States increased nearly 50 per cent, showing the gradually increasing competition being offered the United States refiners in the foreign markets and in a small way the domestic market. As yet, these imports amount to less than 6 per cent of our exports so this factor is not a serious one.

The greatest promise is offered by the development of new uses for wax in the United States. This program has automatically started, particularly in the extended use of wax paper for wrapping foods and candies, a greater use of wax weather-proofed paper boxes, weather-proofed lumber, etc. Through the extension of these uses the domestic demand has been increased from an average of 21,028,000 pounds per month in 1926 to 23,632,400 pounds in 1927. This increase amounts to 13 per cent and accounts for the entire increase shown in the total sales from the United States refineries.

Production has been quick to follow the price trend. During 1927 the average for the month has been decreased to 48,216,200 pounds which is lower than either of the two previous years. The average production in pounds per month is shown below.

Average Monthly Production of Wax in the United States

Year	Pounds
1927	48,216,200
1926	53,816,000
1925	49,215,000
1924	43,048,000
1923	38,887,000

TO AID TOURING IN EUROPE

Better motor transport as a key to peace and prosperity was the keynote of the World Motor Transport Congress in London. A resolution was presented by the International Tourists Alliance that the development of international touring should be encouraged, motor tourists exempted from taxation, passport formalities simplified, visas reciprocally abolished and road and traffic signs and signals standardized. The resolution was adopted.

CRUDE OIL PRICES

(Continued from Page 237)

Artesia (March 12)	1.04
Hogback (N. Mex.) (March 14)	1.33

Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective December 17)

Penna Grade Oil in New York Transit Line (New York)	$2.80
Bradford District Oil in National Transit Lines (Pennsylvania)	2.50
Penna Grade Oil in National Transit Lines (Pennsylvania)	2.65
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	2.45
Penna Grade Oil in Eureka Pipe Line lines (Pennsylvania)	2.60
Penna Grade Oil in Buckeye Pipe Line lines (Ohio)	2.35
Cabell Grade Oil in Eureka Pipe Line lines (West Virginia) (December 4)	1.50
Corning 35-cent grade oil in Buckeye Pipe Line Co.'s line (December 19)	1.45
Corning 25-cent grade oil in Buckeye Pipe Line Co.'s lines (December 19)	1.55
Somerset Oil in Cumberland Pipe Line lines (Kentucky) (December 4)	1.60
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (August 1)	.95
Keister (Pennsylvania) (August 1)	1.10

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective March 14)

Lima	$1.71
Wooster	1.87
**Saginaw, Mich., Saginaw Sand (May 27)	2.05
Illinois	1.60
Indiana	1.48
Princeton	1.60
Plymouth	1.35
Waterloo (Nov. 17, 1926)	1.35
**Western Kentucky	1.33
**Saginaw, Mich., Berea Sand (May 27)	1.95
†Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 16)	1.50
‡Oil in lines of Stoll Oil Refining Co. in Oil City, Ky. (March 16, 1927)	1.50
§Oil Springs (Canada)	2.10
§Petrolia (Canada)	2.11

*Posted by Ohio Oil Co.
†Posted by Paragon Development Co.
‡Posted by Stoll Oil Refining Co.
§Posted by Imperial Oil Co., Ltd.
**Posted by Sun Oil Co.

MEXICAN CRUDE

Note—Due to the fact that the exportation of Tuxpam light crude oil has become a negligible factor, prices will no longer be published.

*Panuco heavy (f.o.b. Mex. ports)	$1.15

*17.496 cents tax.

This SIGN is a *Satisfaction Signal* to motorists!

Authorized Dealer

SINCLAIR OPALINE MOTOR OIL

REG. U. S. PAT. OFF.

Seals Power at every Degree of Wear

WHEN a motorist buys oil at the station which displays this sign, he gets *correct lubrication*—and the Dealer gets more steady business, because the motorist is satisfied!

The method for recommending Opaline Motor Oil (used only by Authorized Opaline Dealers) is an outstanding success! That's because it is the correct method, based on the Sinclair Law of Lubrication. It provides different grades of Opaline to fit the different degrees of wear in automobile engines, as indicated by the mileage on motorists' speedometers. Opaline Dealers ask the motor oil customer his mileage—consult the Sinclair Recommendation Index, and then give him the correct grade. The motorist feels the difference in his car immediately and remembers which Dealer gave him that difference!

May we tell you about this successful method of selling *correct lubrication* with the full line of Opaline Motor Oils?

SINCLAIR REFINING COMPANY, INC.

Also Makers of Sinclair Gasoline and H-C Gasoline

45 NASSAU STREET, NEW YORK

Atlanta Boston Chicago Houston Kansas City

Entire contents copyrighted 1927 by Sinclair Refining Company, Inc.

Oil Securities Show Little Change

Gulf Oil Issue Reaches New High on Reports of Sulphur Discoveries. Market Sluggish Over Holiday Season

The holiday week passed with small change in the oil securities. Gulf Oil of Pennsylvania was again strong, registering a new high when the report that Texas Gulf Sulphur had made additional discoveries upon the block of land which it is operating jointly with the Gulf Oil interests.

Sinclair Crude Purchasing

A syndicate of bankers composed of the National City Co., Chase Securities Corp., Blair & Co., and the First Trust & Savings Bank of Chicago, are offering for subscription a new issue of $42,000,000 Sinclair Crude Oil Purchasing Co. 10-year 5½ per cent gold bonds, Series A, at 98½ and interest, to yield about 5.70 per cent.

The proceeds of the issue will be applied chiefly to the payment of the company's three-year 6 per cent gold notes, due February 1, 1928, of which $39,478,000 out of an authorized issue of $50,000,000 are outstanding.

As of November 30, 1927, the company owned 37,474,000 bbls. of crude oil of a total market value of $52,003,026, together with $3,071,032 cash and $10,803,999 accounts receivable, aggregated $65,878,057 quick assets, equivalent to 136 per cent of the sum of current liabilities (other than the three-year 6 per cent notes) plus the principal amount of the issue of bonds. In addition, the company has invested about $16,000,000 in fixed property consisting chiefly of real estate, storage tanks and tank equipment.

The Standard Oil Co. of Indiana and Sinclair Consolidated Oil Corp., prior to the execution of the Trust Agreement under which the bonds are to be issued, are to enter into an oil purchase contract with the company, the payments under which the company will assign to the trustee under the trust agreement. In this contract Standard Oil Co. of Indiana and Sinclair Consolidated Oil Corp. will agree to purchase, at any time on demand of the company, or its assigns, the entire amount of crude oil and tankage then owned by the company, for a sum in cash equal to not less than 105 per cent of the principal amount of all bonds then outstanding under the trust agreement; each of the two purchasing companies is to agree to purchase one-half the crude oil and tankage for one-half the required sum.

Sinclair Pipe Line

No new financing is contemplated as a result of the decision of the Sinclair Pipe Line Co., owned jointly by Standard Oil Co. of Indiana and Sinclair Consolidated Oil Corp., to extend its Oklahoma-Texas trunk line capacity. The work will cost about $2,000,000 and will increase the capacity of the main line to a minimum of 30,000 bbls. daily, between Oklahoma and Houston, Tex.

General American Tank

The General American Tank Car Co. will close 1927 with cash of over $3,000,000, compared with $1,992,734 in 1926 and $2,560,747 in 1925. At the close of 1927 the company will have approximately 26,000 cars out on rentals, an increase of about 50 per cent over 1926.

Pan American Petroleum

The Pan American Petroleum & Transport Co. directors have taken no action on the quarterly dividends on the common and Class B common stock. Three months ago the annual rate on the common and Class B common stocks was cut to $4 from $6, the latter rate having been paid since April, 1925.

Following the meeting of directors the following statement was issued: "Pan American company is planning a material development of properties in 1928 and notwithstanding the fact that the dividend has been earned, it was thought wise to conserve cash to meet requirements for 1928 expansion and such contingencies as may develop during the year.

"F. H. Wickett, chairman of the board, has been in ill health for some time and has requested the board to accept his resignation. Mr. Wickett will continue as president of the Dixie Oil Co."

Mexican Petroleum Corp.

The Mexican Petroleum Corp., a subsidiary of the Pan American, has declared the regular quarterly dividends of $3 on the common and $2 on the preferred, both payable January 20 to stockholders of record December 31.

White Eagle Oil

The White Eagle Oil & Refining Co. declared a dividend of 25 cents a share, payable January 20 to stockholders of record December 30. Previously the company has been paying 50 cents quarterly.

The company has issued the following statement: "Reduction in the dividend at this time is caused by distressed conditions of the industry, under which oil companies are unable to sell their products at a price that will net a satisfactory margin of profit. It is the thought of directors that it is to the benefit of the stockholders that the company conserve its earinngs in excess of the dividend at the rate just declared, until such time as conditions improve and earnings justify the regular dividend.

"Early this year the company's inventory was reduced to the minimum in anticipation of lower values and now during the period of depression a larger inventory is being accumulated in expectation of increased prices.

"The financial position of the company is good. It has no bank loans and the ratio of current assets to current liabilities is approximately six to one. The company's sales have increased in volume over last year and the business is being operated economically.

"Conditions have improved in the agricultural districts throughout our sales territory and the outlook for next year is promising. Disturbed conditions in the industry, caused by overproduction of crude oil and its products, has run for a longer period than was expected and it may last a few months longer before a permanent improvement takes place. The position of the company is such that it should benefit quickly."

West Coast Oil

The West Coast Oil Co., subsidiary of Associated Oil Co., has declared an extra dividend of $3 on the preferred stock and regular quarterly dividend of $1.50 on the preferred. The extra dividend is payable December 30 to stockholders of record December 23 and the regular January 1, to stockholders of record December 23.

Richfield Oil of California

The consolidated balance sheet of the Richfield Oil Co. of California as of September 30, 1927, compares with December 31, 1926, as follows:

Assets

	Sept. 30, 1927	Dec. 31, 1926
*Oil lands, equip., etc.	$45,551,693	$43,315,446
Sundry invest. & advances	92,199	189,717
Empl'y's stock subscr.	314,421	175,401
Prepaid expenses & other def. charges	875,729	917,494
Cash	818,268	1,033,334
Notes & accounts receivable	3,628,242	3,361,760
**Employes stock subscr.	425,000	.....
Marketable bonds	.....	40,000
Inventories	5,611,514	4,271,079
Total	$57,317,066	$53,304,231

Liabilities

Pfd. stock (par $25)	$ 5,833,500	$ 833,500
Common stock	†29,224,144	28,290,650
Surplus	‡3,807,245	2,994,303
Minority int.	8,181	531,297
Gold bonds	11,650,000	12,000,000
Gold notes of United Oil	1,000,000	2,136,000
Deferred payments	210,640	234,482
Notes payable	1,855,342	1,253,351
Accounts payable	2,185,158	2,692,029
United Oil Co. notes	427,000	.....
Current purch. obligations	.....	714,700
Sundry accts. payable	.....	86,626
State gasoline tax	892,540	667,863
Accrued for interest, wages, etc.	223,316	579,979
Federal income tax	.....	289,445
Total	$57,317,066	$53,304,231

*After depreciation.
**Collectable within one year.
†Represented by 1,168,965 shares, par $25.
‡Subject to federal income tax in 1927.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

Stocks—	Par	Clos. Dec.27	Quot. Dec.19	1927 High	1927 Low	1926 High	1926 Low	1925 High	1925 Low
Amerada Corp.	..	31	30⅝	37⅛	27⅝	32⅞	24¾	..	..
Atlantic Refining, com.	100	107	109½	131⅜	107	128⅜	97	117½	95½
Barnsdall "A"	25	24¾	25½	35½	20¾	32½	23½	33½	18¾
California Petroleum, com.	25	23⅞	24½	32⅞	20	38⅛	30⅞	34⅜	23⅜
Houston Oil	100	157⅝	161	175¾	60⅛	75	50¼	85	50
Independent Oil & Gas	..	25¾	26⅜	32⅜	17⅝	34	20¼	41¾	13½
Louisiana Oil	10	10	10½	18⅛	10½	19⅝	12	23¾	13¾
Maracaibo	..	15¼	15½	22⅜	12	27⅜	18⅜	35½	20¾
Marland	..	34⅝	36⅛	58⅛	31	63⅜	41¼	60⅛	31⅝
Mid-Continent Petroleum	..	28⅝	29¼	39⅜	25½	41	25⅜	38	25⅜
National Supply	50	95⅜	92½	95¾	76	84⅞	55½	71	54¾
Oil Well Supply	25	37	32½	44⅜	31¼	36	30	38	33⅜
Pan American, B.	50	40⅞	43⅜	66⅜	45⅛	72⅜	56⅛	83⅞	59½
Pan American, Western B	..	20⅛	20⅞	37⅝	16¾	46	34	94⅜	37¼
Phillips Petroleum	..	40⅞	41⅜	60¼	36½	54⅞	42¼	47⅛	47¼
Producers & Refiners	50	25⅝	25½	33⅞	16⅜	26	11	32⅜	12½
Pure Oil, com.	..	26¼	26⅝	33½	25	31	25⅜	33⅜	32½
Royal Dutch, N. Y., sh.	13.40	47⅞	47¼	54½	44¼	57⅝	49⅜	57⅜	48¼
Shell Transport	10	43⅛	42½	49	41½	48⅞	42	49	30⅜
Shell Union, com.	..	25⅜	25⅝	31⅜	24⅝	30⅞	24	28¾	21⅝
Simms Petroleum	10	24¼	26¼	23⅞	14¼	25⅝	16½	28½	18⅜
Sinclair Consolidated	..	21	20⅜	22⅜	15⅛	24⅞	16⅜	24⅞	17
Skelly Oil	25	24¼	27⅜	37⅜	24⅛	37⅛	27	32½	21⅜
Standard of California	25	55⅞	55⅞	60⅜	50⅜	63½	54	67¼	52½
Standard of New Jersey, com.	25	39¾	39⅝	41⅞	35⅛	46⅝	37½	47½	38⅜
Standard of New York	25	31½	31⅞	34⅛	29¾	47¼	30⅝	48⅝	40
Sun Oil Co.	..	32	32⅛	34⅞	30	41¼	30⅛	43⅞	38½
The Texas Company	25	52¾	53⅛	58	45	58	48	55	43¾
Texas Pacific Coal & Oil	10	14⅛	14½	18⅞	12	19½	12⅛	23¼	11
Tide Water Associated Oil	..	17⅛	17⅝	19⅛	15⅜	21	17	..	..
Transcontinental	..	9⅛	9⅜	10⅜	3¾	5½	3	5⅝	3½
Union Oil of California	25	44	45⅞	56½	39⅜	53⅜	37¼	43⅜	38½
Union Tank, com.	100	121	126	126	94	120⅝	84¼	‡134	118
White Eagle Oil & Refining	..	20½	21⅛	27½	21⅜	29¾	25⅛	28⅜	25⅝
Standard Oils									
Anglo-American Oil	£1	19	15	21⅝	17⅛	19¾	16½	26⅜	17½
Borne Scrymser	25	57	57	69	49½	75	65	‡240	205
Buckeye Pipe Line	50	57	56	59	45	59½	42	72	63½
Chesebrough Manufacturing Co.	25	117	117	126	76½	81¼	63	74	48¼
Continental	10	19⅜	19	22⅝	16¼	25⅞	10¼	31⅛	21⅞
Cumberland Pipe Line	100	88	91	‡137	90	137	102	156	128
Eureka Pipe Line	100	65½	65	66	47	43¾	43	96	61¼
Galena Signal, com.	100	4	3½	13½	4½	32½	9⅞	68½	23½
Humble Oil & Refining Co.	25	67	67⅜	67⅜	54	99⅝	52	99	40½
Illinois Pipe Line	100	175	178	181½	123⅜	144	131	154½	124
Imperial Oil	..	59	59	64¾	37⅜	39⅜	32½	39¼	27¼
Indiana Pipe Line	50	77	75	93	61	68	52¼	84	57⅛
International Petroleum Co.	10	35⅞	36⅜	34⅞	28¼	35¼	28⅜	25⅜	20⅛
National Transit Co.	12.50	20⅝	21¼	23¼	13¼	30⅜	27¼	25½	16½
New York Transit	100	38	38	42	31¼	61½	27¼	70	50
Northern Pipe Line	100	92	91	96	70	80½	64	88	67½
Ohio Oil Co.	25	65⅝	66	66	52	67⅜	55⅜	75¼	60
Penn-Mex Fuel	25	36	33	36⅛	12	24¼	15	44	19
Prairie Oil & Gas	25	49⅜	50¼	55½	45⅝	60¼	49	65½	45⅞
Prairie Pipe Line	100	188½	189	189¼	132	137½	122½	129¾	105
Solar Refining Co.	100	175	175	‡201½	178	212	184½	259	200
South Penn Oil	25	37¾	37	41½	34½	50	30	‡197	139
Southwest Pa. Line	100	72	74	78	55½	56	47½	84	50
Southern Pipe Line	50	20½	21	39	18½	27	34	‡103	63
Standard of Indiana	25	78¼	79¾	80¼	64⅝	70½	60½	70¾	69¼
Standard of Kansas	25	15⅛	15½	20⅞	15⅝	36½	16½	45	30
Standard of Kentucky	25	122½	122¼	125½	111½	134⅝	107	137	114⅜
Standard of Nebraska	25	41¾	41	49½	43	51⅛	42	‡270	231
Standard of Ohio, com.	100	78½	77	81½	72	362	192½	369	338
Swan & Finch, com.	25	17½	18	21	14½	21	18	27	12
Vacuum Oil	25	140½	143⅛	147	95⅛	109⅜	94⅛	109½	80½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	113½	108	113⅛	86⅛	95	82½	98¼	63½

*Bid, no sales. ‡Old stock. †New stock. §Ex-dividend.
Quotations furnished by W. J. Wollman & Co.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Dec. 27	62.86	Nov. 21	63.66	Oct. 17	59.22
Dec. 19	63.24	Nov. 14	62.78	Oct. 10	59.20
Dec. 12	62.07	Nov. 7	61.30	Oct. 3	60.97
Dec. 3	62.06	Oct. 31	60.98	Sept. 26	61.30
Nov. 28	62.92	Oct. 24	60.45	Sept. 19	60.83

SHREVEPORT MARKETS IN BETTER CONDITION

SHREVEPORT, La., Dec. 27.—With their gasoline output for some time ahead booked up and those making gas oil oversold on the product, refiners in this territory found nothing to complain of in the market over the holiday period in which they took Saturday and Monday off. There has been very little change in prices on any of their products in this territory for the last month. U. S. Motor fuel is unchanged at 6½ to 6¾ cents; gas oil at 3 to 3¼ cents, and kerosene at 5 cents, though the latter is a little weaker than it has been. Fuel oil continues at $1 per barrel. With most refiners running neck and neck with their orders. Altogether they say their affairs are in the best condition, generally speaking, they have been in the last two or three months.

DEATH OF A. C. STEWART

Alfred C. Stewart, inventor and California pioneer, died at his home, South Pasadena, December 19. Mr. Stewart, who was 53 years of age, was the younger son of Lyman Stewart, late "Father of Western Petroleum," and went to California in 1883, the year his father began operations which led to the founding of the Union Oil Co. His brother, W. L. Stewart, now is president of this company, control of which has been in the hands of the Stewart family since it was formed.

Mr. Stewart contributed much to automotive science, his best-known inventions being the Stewart carburetor, although he was the creator of many other devices now in common use on motor cars.

Golden Lanes of Greenwood County

Evidence Points to Streams Working Over a Valley-Flat Environment as Origin of Sand Deposits in This Area

By W. K. Cadman*
Wichita, Kans.

Abstract

A critical examination of shore-line processes and shore-line development, when applied to conditions in the Golden Lanes of Greenwood County, Kansas, shows that the shore-line theory of origin of the sands is not applicable to conditions as revealed by the drill. The narrow sand bodies, the absence of a cliff or cliff-forming element, the irregular bottom of the sands, the complex cross sections of the sands, the meandering of the trends, and branching of the trends cannot be accounted for by shore-line processes.

The evidence points to streams working over a valley-flat environment as the origin of the sand deposits of the Golden Lanes.

Structural geology, because it lacks consistency or trueness to form, is of no value as an index to the location of the trends, or to points where production may be found in the trends.

The present trends are but a part of a much greater system whose limits are yet to be found.

The sand trends of the Golden Lanes of Greenwood County, Kansas, are from one-half to 1½ miles in width and nearly 40 miles long, but the ends of the trends have not as yet been found. Along these trends are found many oil pools, strung out as links in a great chain, which form one of the most singular types of producing areas known to the oil industry. This very deviation from the ordinary in pool types is a constant challenge to one's curiosity as to the origin of the trends, and makes them worthy of attention and careful study.

In presenting these observations of the Golden Lanes, the area under observation is not confined to Greenwood County alone, but includes adjoining counties in which many interesting features have been revealed. For a detailed study of the problem a single township was worked in close detail. This area, Township 23s, Range 9e, was selected because (a) it is an area of typical trend development; (b) the finding of oil in commercial quantities has resulted in the drilling of many wells (total, 313) from which much detailed information has been derived; (c) the township is the only trend township in which, up to the present time, two major trends are located; and (d) within this township has occurred the developmental history of the Golden Lanes.

In studying a phenomenon buried many feet below the surface of the earth and revealed only by data from drilled wells it is obvious that the details revealed by the drill will be but a small fraction of those which might be obtained from a study of the same phenomenon at the surface of the earth. Consequently, in this study all that is available to us are the more general and pronounced features of the sand deposits; our information must be almost completely confined to a study of the top, the bottom, the distribution, and the cross sections of the sand bodies.

As these trends have been interpreted as shore lines, and as a land mass and a sea are essential to shore-line development, it is well here to define them in relation to the sand trends in question. The only land mass known to have existed in proximity to the Golden Lanes at the time of their deposition is the buried granite ridge, the Nemaha Mountains, which lies west and northwest of the trend area under discussion. There may have been other land areas in existence besides the granite ridge when the Golden Lanes were laid down, but up to the present time their existence has not been revealed in or near the area of the trends. From the available data we correctly conclude that the granite ridge, with its foothills, was the land mass; east and southeast of the land mass were the shore lines, with the sea stretching to greater distances in the same directions.

Resting upon, and stratigraphically unconformable with, the peneplaned "Mississippi lime" is the basal member of the Pennsylvanian system, the Cherokee shale. In the lower portion of the shale are three sands which are in most places easy to recognize, and of economic interest because they carry oil. In contact with the "Mississippi lime" and at the base of the Cherokee shale in the Burgess sand, which produces some oil in such places as the Weirshing Pool, Section 23-26s-9e. Above the top of the "Mississippi lime," at an average interval of 135 feet, is the Bartlesville sand—the producing sand of the Golden Lanes. At an average interval of 80 feet above the top of the Bartlesville sand is the Cattleman sand, which is the producing horizon of such pools as the Wiggins Pool, Section 30-24s-11e, the Christy Pool, Section 9-25s-11e; the Hollis Pool, Section 16-23s-10e, and the Burkett Pool, Section 12-25s-8e. Although some geologists are inclined to combine the Burgess sand, the Bartlesville sand, and the Cattleman sand into the Bartlesville group, such a classification is not made in this study. The Bartlesville sand is here considered exclusively.

Prior to the deposition of the Cherokee shale, the "Mississippi lime" had been planed down to a peneplain of moderate relief. A study of the present surface indicates a maximum relief of about 200 feet, but as the surface is the result of irregular erosion, followed by some warping due to folding and differential settling, it is quite possible that the original relief was somewhat less than 200 feet, maximum.

Average Maximum Relief

At no place outside of the granite ridge area has a "Mississippi lime" been found high enough to cut out the Bartlesville sand, although in places the sand has been found deposited in contact with the lime. With an average interval of 140 feet from the top of the Bartlesville sand to the top of the "Mississippi lime," and an average thickness of 30 feet for the Bartlesville sand, we have an average maximum relief of about 100 feet for the peneplained surface.

As to whether this eroded plane is the result of fluvial planation or marine planation, the information is not conclusive. Our knowledge of the relation between land and sea during the late Mississippian and early Pennsylvanian periods makes it seem most likely that the peneplain is due to both aerial and marine erosion. This much is known: during this period of alternate submergence and emergence the sea was compelled to work over a plain of great area and of moderate relief.

If the peneplaned surface of the "Mississippi lime" was preserved during the deposition of the early Cherokee shale, any shore line formed in the shale should have the profile of the normal shore line of emergence[1] during the periods of emergence. On account of the peneplaned surface, shore lines formed during the periods of submergence will not have the profile of an irregular shore line of submergence, but will have an initial profile resembling that normally characteristic of a shore line of emergence, and the history of development will be that for such a profile.

Belong to Coastal-Plain Type

The basal members of the Cherokee shale seem to have been deposited conformably upon the peneplaned surface of the "Mississippi lime," and in all probability the plain surface has been substantially reflected in the successive layers of the shale. Therefore any shore lines that may have been formed belong to the coastal-plain type of shore lines of emergence.

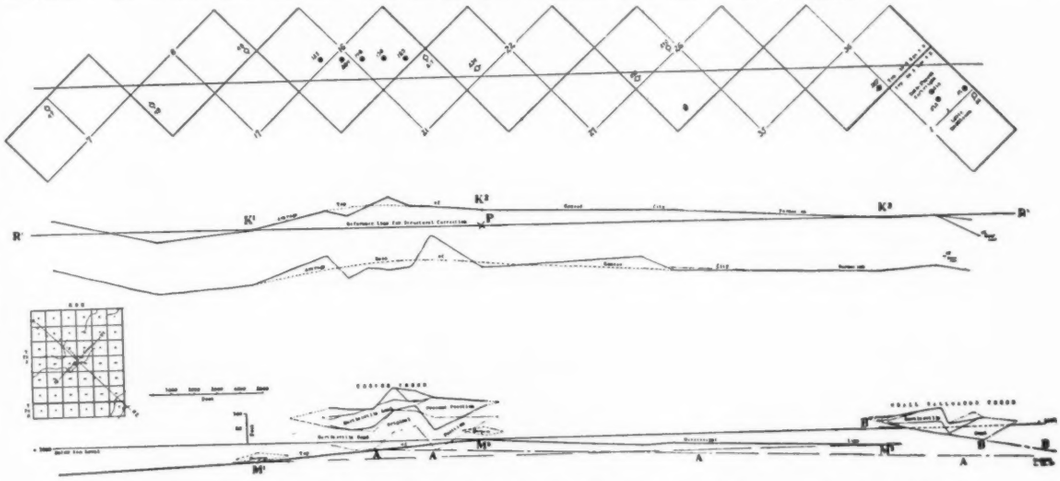
An important characteristic of the sand deposits of the Golden Lanes is the regularity of the sand margins. A glance at Figure 1 will show a noticeable absence of features typical of a shore line of submergence[2]. There is no evidence of an exceedingly irregular shore line, numerous branching bays, or drowned valleys, or many projecting peninsulas. The crenulate shore line is not in evidence; neither are beaches, such as headland beaches, bay-head beaches, or bay-side beaches. Embankments, in the form of spits, bay bars, bay-mouth bars, bay-head bars, winged headlands, and tombolos, are not recognized. The sand deposits are not wide.

An important feature common to both

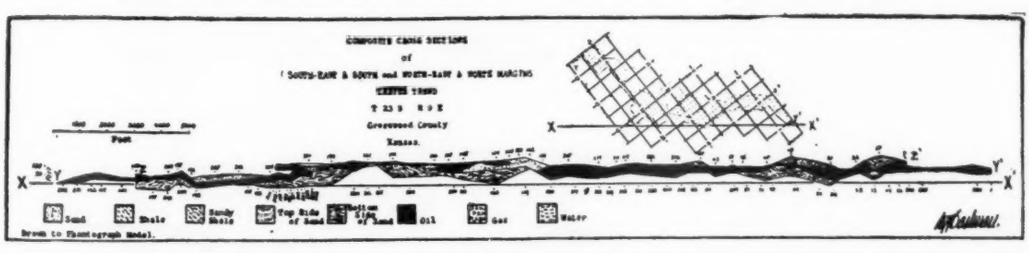
*Before American Association of Petroleum Geologists at Tulsa meeting. Published by courtesy of the association, and by permission of the Bulletin of the American Association of Petroleum Geologists.

[1]For characteristics of shore lines of different types at various stages of development, see standard textbooks and especially D. W. Johnson, Shore Processes and Shoreline Development, J. Wiley & Sons. Familiarity with these features is assumed in the following discussion. Johnson's terminology is used.

[2]D. W. Johnson, op. cit.



Reconstructed cross section between the Teeter and the Thrall-Sallyards trends, Greenwood County, Kansas.



Composite cross sections of the southeast and south, and the northwest and north margins of the Teeter trend, Township 23s, Range 9e, Greenwood County, Kansas. Where the sand of the northwest and north margin extends above or below the southeast and south margin, the top surface of the sand above, and the bottom surface of the sand below, is shown.

the shore line of submergence and the shore line of emergence is that the normal profile has a comparatively steep slope descending rather abruptly into the water (shore line of submergence), or the subaqueous plain of deposition (shore line of emergence) normally has a surface gently inclined away from the shore line. A glance at Figure 2 will show that the cross sections of the sand do not conform to this important feature, even if allowances are made for the present regional dip. In cross sections B, E, and G the sand obviously slopes shoreward; in sections C (when corrected), D, and H, it can be interpreted as sloping seaward; in sections A and F it slopes both ways.

Furthermore, a point on the base of the sand deposit at the shoreward margin should be higher than a corresponding point at the seaward margin and perpendicular to the shore line. Under normal conditions the sand deposits should increase in thickness from the shore to the sea, that is, the average thicknesses of the seaward deposits should be greater than those of the shoreward deposits. The exceptions to this situation are seen where sand dunes lie along the coast and where the submarine bar or the offshore bar is present.

Complicated Relationship

A careful study of Figure 3 will show a very complicated relationship between the two margins of the sand deposits. Even though allowances be made for the slight regional dip across the trend, it is found that sands along the north and northwest margin of the trend are lower or higher and thicker or thinner than sands along the south and southeast margin. It is quite obvious that conditions here do not conform to the features to be expected along a shore line.

A study of the Bartlesville zone in Township 23s, Range 9e, shows an absence of a cliff or cliff-forming element on the landward margin of the trend. The depositional sequence along the north and northwest margin is practically the same as along the south and southeast margin.

Of the 313 wells drilled in the township, 220 (70.27 per cent) show shale in contact with the top of the Bartlesville sand. In the Teeter trend, 59 (18.84 per cent), the Thrall-Sallyards, 4 (1.28 per cent), and outside of the trends, 6 (1.92 per cent) show sandy shale in contact with the sand. Red rock is in contact with the sand or sand zone in three places, two of which are in the south and southeast margins.

Lime in contact with the Bartlesville sand is indicated in 21 places, two of which are outside the trends, and 19 identified with the Teeter trend. Of the 19 wells showing lime in contact with the sand, 2 are in the south and southeast margin, and 3 are in the north and northwest margin. Seventeen are scattered through the trend.

The shales along the two margins of a trend do not show the differences in character which would be expected along the opposite sides of a coastal sand strip.

From this study of depositions we can be safe in concluding that there is neither a pronounced cliff nor a low and inconspicuous cliff associated with the sand deposits of the Golden Lanes.

If the shoreward margins of the trends were really cliffs, but so small and inconspicuous as to be masked by subsequent deposition, the sand deposits seaward from the cliffs should have widths ranging from a few to many miles. The continental shelf facing a coastal plain is generally very wide and is mostly covered with sand. Murray[3] reports that the deposits formed between the shore and the continental shelf, estimated as covering at present about 10,000,000 square miles, consist mainly of finer sands, and more rarely of muds which are washed from the shore.

It is hardly likely that the narrow sand deposits of the Golden Lanes, with no evidence of cliffs, and laid down upon a broad plain, are the result of shoreline processes. Where we should reasonably expect deposits several miles in width, we have sand bodies ranging from one-half mile to 1½ miles in width.

[3]A. W. Grabau, A Comprehensive Geology, Part 1, p. 549.

Conclusion Untenable

It may be held by some that the Thrall-Sallyards trend is an offshore bar to the Teeter trend. An examination of the data will show that such a conclusion is made on untenable ground. Figure 4 represents a reconstructed cross section between the two main trends. Line R_1-R_2 is drawn so as to conform as nearly as possible to the regional dip, as well as to cross the trends on a line perpendicular to their axes. As line R_3-R_4 (Figure 7) is drawn perpendicular to line R_1-R_2, it coincides with the regional strike.

If the Thrall-Sallyards trend is an offshore bar to the Teeter trend, or even parts of a single shore line, then a line BBB (Figure 4) drawn through the average base of the Thrall-Sallyards deposit in its original position should be a straight line projection of the line AAA which is drawn through the average base of the Teeter deposit in its original position. The reconstructed cross section shows the relation between the sands in the two trends.

A study of the formations in the Bartlesville zone between the Teeter and the Thrall-Sallyards trends does not point to the presence of a lagoon. According to Twenhofel[4], the environment and sediments of a marginal lagoon are fine sands, silt, clay, and young shells from the sea. Shallow depths in the lagoon favor plant growth, and presence of vegetation favors the presence of marine animals, although the latter may be small or dwarfed on account of the character of the water. Calcium carbonate is precipitated by plants and animals living in the water. Stratification should be regular and even, except near openings of the bar and near the mouths of streams flowing into the lagoon. Colors of sediments range from gray, where vegetation is sparse, to dark, where it is abundant.

[4]W. H. Twenhofel, Treatise on Sedimentation (Baltimore: Williams & Wilkins Co., 1926), p. 602.

No Evidence of Lagoon Deposit

Of the many wells drilled between the trends, 16 have had Bartlesville sand—probably eolian—ranging from 5 to 25 feet in thickness; a few have had sandy shale in the Bartlesville zone; and most of them did not show any sand at all. The colors of the shale are light gray, dark gray, and, in a few places, black. Most of the black shales are in or near the sand trends. Lime is not plentiful in the Bartlesville zone. The Bartlesville zone between the trends is like the same zone west of the Teeter trend and east of the Thrall-Sallyards trend. There is no evidence of presence of a lagoon deposit.

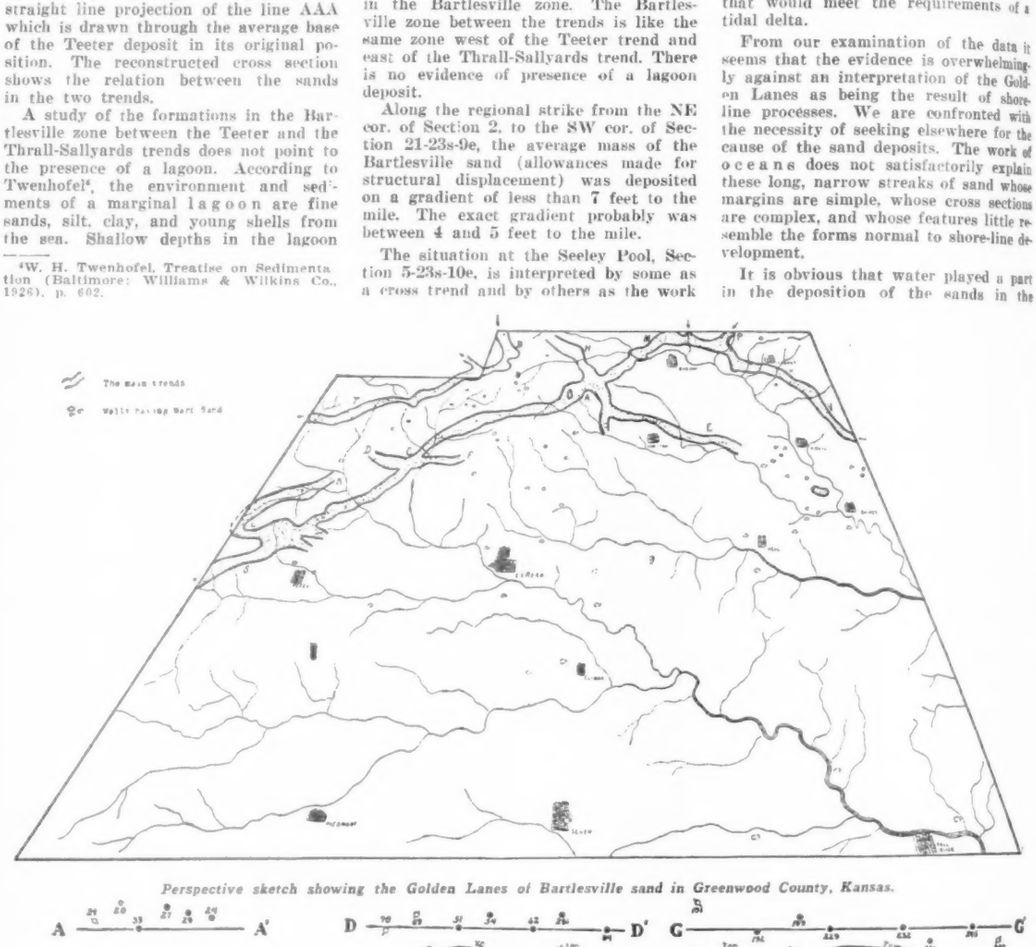
Along the regional strike from the NE cor. of Section 2, to the SW cor. of Section 21-23s-9e, the average mass of the Bartlesville sand (allowances made for structural displacement) was deposited on a gradient of less than 7 feet to the mile. The exact gradient probably was between 4 and 5 feet to the mile.

The situation at the Seeley Pool, Section 5-23s-10e, is interpreted by some as a cross trend and by others as the work of tidal currents cutting through a beach. The situation obviously is not the result of crossed shore lines.

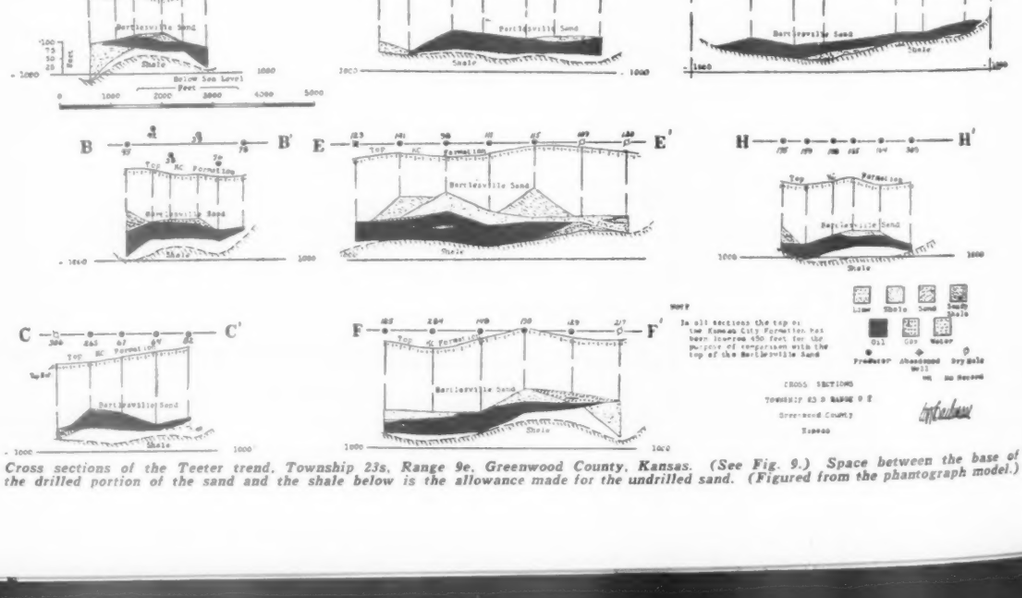
That the crossing of the two trends is the result of tidal currents cutting through a beach cannot be substantiated by the evidence. A careful examination of the data will show that (a) the Harris branch of one slope, and the Ellis branch of a different slope, come to grade with the Thrall-Sallyards trend at the point of intersection; (b) the restricted sand pattern of the Harris branch does not show a branching into a lagoon, nor does the restricted sand pattern of the Ellis branch show a truncation toward the sea, which are normal features of a tidal delta; and (c) there is no thinning of the sands at the point of intersection, and the erratic distribution of sand textures, characteristic of the trends, is present where the sand trends cross. There is no distribution of sand here that would meet the requirements of a tidal delta.

From our examination of the data it seems that the evidence is overwhelmingly against an interpretation of the Golden Lanes as being the result of shoreline processes. We are confronted with the necessity of seeking elsewhere for the cause of the sand deposits. The work of oceans does not satisfactorily explain these long, narrow streaks of sand whose margins are simple, whose cross sections are complex, and whose features little resemble the forms normal to shore-line development.

It is obvious that water played a part in the deposition of the sands in the



Perspective sketch showing the Golden Lanes of Bartlesville sand in Greenwood County, Kansas.



Cross sections of the Teeter trend, Township 23s, Range 9e, Greenwood County, Kansas. (See Fig. 9.) Space between the base of the drilled portion of the sand and the shale below is the allowance made for the undrilled sand. (Figured from the phantograph model.)

Golden Lanes. We have given reasons for thinking that the sands were not deposited through the agency of ocean waves, tides, or currents; also reasons for looking to the work of streams as the one remaining possible source of the sand deposits. The valley-flat phase of the fluvial environment, as described by Twenhofel[2], is believed to correspond closely with conditions under which the sands of the Golden Lanes were deposited.

The textures of the sands in the Golden Lanes range from very fine to coarse, but no conglomerates or gravels have yet been found. Large angular fragmental material is absent. Stratification of textures is fairly uniform, although beds of coarse, medium, and fine sands are interbedded in an irregular manner. It is quite common to find a bed of coarse sand in contact with a bed of fine or medium sand.

As all streams are more or less crooked, their courses show a meandering pattern. As a stream meanders over its flood plain the line of greatest water velocity impinges alternately on opposite banks, giving rise to a succession of reverse curves[3] of varying amplitude. These reverse curves, together with the straight reaches between the curves, constitute the normal course of a meandering stream.

As the stream works back and forth over its floor its valley is widened. This widened valley also meanders in a series of reverse curves, depending upon the topography over which it passes. The internal reverse curves of the river channel, caused by the influence of variable velocity in running water, are more numerous and of smaller amplitude than the marginal reverse curves in the course of the river valley, which are primarily due to the influence of topography.

Reverse Curves Clear

The pattern of the Golden Lanes shows very clearly the marginal reverse curves of a meandering river valley.

Streams, because of varying current velocity, consist of alternating deeps and shoals[3], the deeps at the convex sides, the shoals where the currents cross to the opposite side. During floods the deeps are eroded, the shoals or bars are built up. As the flood subsides the deeps are filled and the shoals are eroded. As the shoals are scoured, finer materials in the upper portion are removed, while the coarser are left. During erosion of the deeps finer materials are removed and coarser materials are left. During low water the deeps are receiving fine material which comes to rest on the coarser material left by previous scouring.

A study of a model of Township 23s, Range 9e, shows that in the Teeter trend there is a relationship between some of the low, thick sands and what seem, to be internal reverse curves. Evidently the low position of the sand is the result of scouring, while the thickness is effected by subsequent filling. Throughout the trend, layers of coarse, medium, and fine sands occur at random. The complex and irregular bottom of the sand deposits can be accounted for by the scour-and-fill action of streams.

The model also shows the sharp limits of the sands at the margins of the trend. Many wells show from 10 to 50 feet of sand within a location of wells without sand. In several wells a sand thickness of more than 100 feet has been observed next to a well with the sand absent. This occurs on both margins of the sand deposits, and to a large extent is responsible for the regularity and smoothness of the sand margins. Evidently this condition is the result of water running in a channel.

The occurrences of pronounced breaks in the sand at the margins of the deposits are surprisingly few. Although the sand from producing wells drills up and washes out clean, undoubtedly the sand is interbedded with very thin laminations of shale[4], which disappear in the process of drilling and washing the sample. The few pronounced breaks that have been found in the sand are inside, as well as at the margins, of the deposits.

The occurrence of clean sand without pronounced breaks is common in streams whose sands have been transported long distances. The little shale sediment that is deposited after floods is ground up by the sands rolling along the stream bottom, the fine particles of shale passing off in suspension. The sands in the valley of Arkansas River at Wichita, Kans., evidently have been cleaned in this manner.

Angles Point Downstream

It is not a matter of coincidence that the angles between the trend branches and the main trends—where less than 90 degrees—all point in the same direction in relation to the main trends. A glance at Figure 1 shows that the angles point "downstream," which is toward the west side of the county.

The Seeley crossing is undoubtedly the result of two branch streams entering a main stream at a common point. The Harris branch, flowing southeast on a certain gradient, and the Ellis branch, flowing northwest on a different gradient, come to grade at the point where the two branches intersect the main stream which flowed southwest. The area of no sand in the the SE of Section 12, and the NE of Section 13-23s-10e, is an island in the main Thrall-Sallyards trend.

Limestone beds in contact with the Bartlesville sand evidently are the result of evaporation of calcium carbonate in solution, possibly aided by precipitation through algal growth. The limes are very spotty and limited in distribution, and are from 5 to 10 feet thick.

The top of the Bartlesville sand suggests the presence of sand dunes on a river-valley flat.

The preponderance of evidence points to the sand deposits of the Golden Lanes as being the result of stream deposition in a valley-flat environment. In the Bartlesville sand of the Golden Lanes we have the remains of a great stream system which drained a great valley east of the Nemaha Mountains. This stream flowed in a general southwest direction, where it eventually emptied into a larger stream which drained a great valley west of the mountains.

For the valley east of the mountain the author suggests the name Nemaha Valley; for the Thrall-Sallyards trend, the name Nemaha River, and for the Teeter trend, the West Branch of Nemaha River.

Structure and the Golden Lanes

The data may now be examined for any relationship between the structural geology and the deposits of the Golden Lanes.

The developmental history of Township 23s, Range 9e, which is typical of the development of the Golden Lanes, is, briefly, as follows:

1. The first wells drilled in the township were located according to orthodox geological theory; they were on top of the structural highs. They were high and dry.

2. In further prospecting for oil, the first wells to find oil in commercial quantities were down off the structural highs, in north and northwest directions[5]. This led to locations being made according to the following empirical rule: Locate wells for oil west and southwest of structural highs. This rule was followed for several years, until

3. Further drilling invalidated the empirical rule, and drilling in the trends became the common practice.

A comparison of the top of the Kansas City formation (Plate 7) with the top of the Bartlesville sand (Plate 8) shows the following important features:

1. In some places a structural feature in the top of the Bartlesville sand is reflected by a feature of the same type in the top of the Kansas City formation. In most places this condition is not found. Domes over saddles, anticlines over synclines, and noses over domes are the complex rule. The surface of the Kansas City formation does not portray the surface of the Bartlesville sand to any practical or dependable degree.

2. The Bartlesville sand trend passes over the main structural feature (anticline in the Kansas City formation, with northwest axis, in the center of the township) without any deflection. The sand was deposited before the structural feature was created. When covered, the position and main features of the sand deposit were fixed.

The list of structures in which oil is found is an imposing one, but, owing to a lack of consistency in production conforming to structure, such a list is of no practical value as an index to possible production in undeveloped territory.

"Mississippi Lime"

Most wells drilled in the Golden Lanes never reached the top of the "Mississippi lime" because production was found at shallower depths. However, the dry holes in the trends and outside the trends usually were carried to the top of the "Mississippi lime" or beyond, and this class of wells has furnished the data on the top of the lime.

Much work has been done in mapping the surface of the lime, and interest in this work has always been sustained by the belief that there is a relationship between the "Mississippi lime" highs and the deposition of the Bartlesville sand. It is held by some that deposits of Bartlesville sand should be found in the low points of the lime topography—an idea worthy of much consideration until we have an opportunity to subject the idea or belief to a critical test. Such an opportunity presents itself in at least two important places:

1. At the Keighley Pool the "Mississippi lime" is so high that the Bartlesville sand, in places, is resting upon the lime; yet the axis of the sand trend passes over the axis of a nose in the "Mississippi lime" almost at a right angle, without deflection of the sand trend.

2. At the Drumm-Bitler Pool, with the lime as high as Keighley, the sand continues on its course irrespective of the structural feature in the lime below.

Though so few examples do not necessarily invalidate the belief or idea, they do warrant our not attaching too great importance to the idea that the high points in the "Mississippi lime" surface have controlled the deposition of the Bartlesville sand.

Fluid Zones

The fluid in the sands of the Golden Lanes may be divided into three zones, as follows:

1. The all oil-gas zone.—In this zone oil and gas are the predominating fluids; water is found only in low places in the sand or in lenticular sheets between layers of oil. The water in this zone is easily handled and exhausted.

2. The oil-gas and water zone.—In this zone there is an increase in the amount of water present, but it still is limited to amounts that can be readily handled. This zone grades into

3. The all-water zone, in which nothing but water is found in the sand.

This zoning of fluids evidently is due to restricted readjustments of the fluids. When the area of the Golden Lanes was tilted into a regional monocline the oil, gas, and water were unable to readjust themselves up and down the regional dip, but were compelled to readjust themselves along the sand trends.

Although we can expect little dependable aid from structural geology in working with the sand trends, we can, through subsurface work, map the sands, and in this way find the sand pattern, which is the key to the solution of the problem. "Map the sand to get into it, and study the sand to stay in it" is a very good rule in working with the sand trends.

Future of the Golden Lanes

The future of the Golden Lanes depends upon three factors:

1. Closing the gaps in the present main trends and branches. Many present gaps, where not in the all-water zone, have good prospects for production.

2. Extension of the present main trends and branches, and the discovery of new branches. The present Golden Lanes are but a small part of a great system whose limits have not been found. New branches in the present area, and branches in the extended areas, are yet to be found.

3. The Golden Lanes, because of their good sands, their reasonable depths, and because of the restricted lateral limits (narrowness) of the sands, present an opportunity of the greatest importance to those who are interested in the reclamation of oil by the injection of gas, air, or water into the sands.

From this study of the Golden Lanes of Greenwood County, Kansas, we conclude that (1) The Bartlesville sand deposits of the Golden Lanes are due to the work of streams in a valley-flat environment, and are not the result of oceanic waves and currents working on a shore line. (2) Structural geology is of no value in indicating the presence of the trends, or the best prospects for production in the trends, and (3) the present Golden Lanes are but a part of a much greater system whose details and limits are yet to be found.

---

[2]W. H. Twenhofel, Treatise on Sedimentation, pp. 563-69.

[3]First called to the author's attention in conversation with John L. Rich.

[4]W. H. Twenhofel, Treatise on Sedimentation, pp. 28-29.

[5]Large pieces of sand rock obtained after some shots have shown the thin laminations. In many wells production is found in the lower portion of a thick sand body, evidently held down by a thin lamination of shale.

[6]Early drilling at Sallyards found paying wells west of the structural highs.

OIL INDUSTRY HOLDS COMMANDING PLACE

(Continued from Page 46)

of the year. Records of other manufacturers would tell a similar story and swell the totals enormously.

Statistics compiled by the National Automobile Chamber of Commerce and printed in its 1927 edition of "Facts and Figures of the Automobile Industry," provide additional testimony of the importance of the oil industry to the manufacturer of trucks. Under the heading of "Leading Truck Fleets in the U. S. A." it lists 26 business concerns and other institutions. Of these 11 are oil companies, the Standard Oil Co. of Indiana, 910 South Michigan Avenue, Chicago, leading with a fleet of 3,385 trucks.

It is estimated that on July 1, 1927, the oil industry's trucks and passenger cars represented an investment of $258,727,000, divided passenger cars $101,727,000 and trucks $157,000,000. Other sorts of automotive machinery in use in the various branches of the oil business would increase this total materially.

Further evidence of the commanding position which the oil industry occupies with relation to the automotive manufacturing business is found in figures collected by R. L. Polk & Co., Inc. A table showing the industrial use of motor trucks reveals that in the use of all trucks of more than 1 ton capacity "Oils and Gasoline" rank second in the United States, being passed by "General Trucking" only. They rank second also in the use of all trucks of 2½ tons or more capacity and fifth in the use of all trucks of 1 ton or more capacity. In the total of all trucks used "Oils and Gasoline" take sixth place in the United States.

Interstate Commerce Commission reports show that in railroad shipments of manufactured articles in 1926 refined petroleum and its products had first place, with 1,731,701 carloads. Automobiles and auto trucks were third with 889,788 carloads. These figures, of course, throw no light on "interpenetration" and convey nothing as to the importance of the one industry to the other. They just provide a little sidelight that adds to the oil industry's sense of satisfaction. Contributing further to this feeling of gratification are figures showing that while 889,778 carloads of motor vehicles and parts were shipped in 1926, gasoline, lubricating oil and crude petroleum made up 1,017,650 carloads. Before closing a somewhat boastful paragraph, let it be pointed out that according to figures from the Bureau of Foreign and Domestic Commerce, exports of petroleum products in 1926 were valued at $554,200,000, while automotive products exported were valued at $337,400,000.

Motor Transport in Oil Industry

Construction of Tank Trucks Important. Shapes and Types Compared. Standardization Suggested

By J. F. Winchester
Standard Oil Co. of New Jersey.

The tank truck probably creates more general interest than any other class of motor vehicle used in the oil industry. It is used as both a delivery and advertising medium. It and the stake truck probably receive more direct attention by the industry itself, because if prompt and regular service is to be given it must be dependable, and the operating costs must be kept within reasonable limits if profits are to be realized.

Tank trucks vary in size from 260 gallons to as high as 3,500 gallons. With the advent of good roads there has been a decided tendency to install larger units and this trend has been accomplished without any tendency toward greater fire hazards.

Value of Oval Type

Tank trucks vary in many particulars. Individual ideas are incorporated in various designs, and there is a probability that within the industry there is a great opportunity for standardization of certain features along lines that will promote future improvement, which might result in lower first cost to the user. The tanks vary in shape. They may be oval, circular, rectangular, semirectangular, or a combination of these different shapes. The oval tank probably is the one most generally used. The probabilities are that this was brought about because of its many advantages. The oval shell offers a greater capacity per pound of steel. It is simpler and superior to build from a mechanical construction standpoint, which tends toward economy in its first cost, and the entire combination tends to result in general lower transportation costs over the life of the unit. The oval type produces no injurious construction or welding stains, while the curves naturally stiffen the sides and belly, making unnecessary additional bracing. The more acute the bend the greater becomes the construction strain, and the flatter the bottom the greater is the need for stiffening members or swash plates.

The oval type is naturally elastic in comparison with the semirectangular, and therefore, distributes and dissipates the working strain without concentration at any particular point. In our operation we have used both types of equipment. We have found some of the earliest semirectangular units to have very short life as compared with the oval.

The question of appearance is largely a matter of choice, particularly since the use of side racks practically makes it impossible to discern whether the tank is rectangular or oval. There is no given type that can be called a standard. It may seem that the opportunity for scientific changes were limited, yet in the past two or three years I have seen so-called standards discarded and new types built up that are giving, universally speaking, a high degree of satisfaction.

Construction

There have been two schools as to constructional features. First, those who feel that a truck tank should be welded, and second, those who favor riveting. From my experience it appears as if the welding is by far the most satisfactory process. The number of leaks or difficulties we have encountered with loose rivets, compared with leaky welded seams, has been very numerous, with the result that we have gone to the welding method practically 100 per cent.

As to the methods of fastening the compartments together; some have favored welding, while others have used single compartments fastened together with a strap and carried on cradles. Some favored double bulkheads while others favored single. From a standpoint of general safety where mixed products are carried, it seems to me that double bulkheads are highly desirable, although there are types of single bulkhead construction that practically eliminate the possibility of material getting from one compartment to another. We have used all types and favor the tank units being fastened together into a complete tank, as this type of construction has certain advantages that are very apparent in the larger size united.

The mounting of the tank upon the chassis is of considerable interest. Many truck manufacturers have claimed that frame breakage was due to the nonflexibility of the tank unit. I am more inclined to believe the difficulty with frame breakage has been brought about either through improperly designed tanks for the chassis, or poor material in the chassis frame member itself, although it is true in the majority of cases that tank truck bodies weigh more than the standard National Automobile Chamber of Commerce body allowance for a given chassis.

The suspension of the tank on the chassis can be classed under two headings—flexible and rigid, while the mounting itself which directly supports the tank can be classed as wood, wood and steel, and all steel. The all-wood type was generally used in the early days, and while it is more expensive to maintain, yet it has the decided advantage of rapid replacement in any locality, and while it may appear to be a greater fire hazard, this is an unimportant point.

The wood and steel and all-steel types have given us, universally speaking, about equal satisfaction. There is little to choose from in these types, although in simplicity and probable lightness, there seems to be greater possibilities in the all-steel type.

Suspension Types

The three point suspension has certain inherent advantages over the rigid, yet if not properly designed, or neglected in its manufacture, trouble may result. We employ both types and have had the rigid type over the longest period, and that type predominates with us.

From the standpoint of getting the material from the tank to the cans of carrying buckets, or underground tank, the gravity system has been very satisfactorily employed throughout the country for a long period. Within the past year or two a new system has made its appearance, the siphon system.

To protect the material in the tank from spilling or leakage in case of an accident to the pipe line, a double set of valves seem advisable. We use this system in the majority of our vehicles. They are not full automatic in many instances, nor do I see the real necessity any more than I can see the necessity for two valves in small tank trucks in sparsely settled districts. Double valves do no harm, and act as an additional protection against fire hazard, but the fire records do not bear out the contention that thousands of trucks in use should be rebuilt.

Fueling Airplanes

A more modern piece of equipment giving an indication of the trend toward solving the problems of fueling airplanes, was recently installed at the Wright Air Field by the Army Air Service.

The tank itself is mounted on a 4-wheel drive Coleman truck, equipped with 42 by 9 single pneumatics in the front and duals in the rear. The special equipment includes a gasoline tank of 100 gallons capacity, and air tank, air compressor, Blackmer power gasoline pump, emergency hand pumps for gasoline, oil and water, meters for metering gasoline and oil in and out of the tanks, also miscellaneous equipment such as gauges, hose, etc.

Gasoline is pumped in and out of the tank by means of the power pump, which is connected to the power takeoff on transmission with a drive chain. Oil and water are forced out of the tanks by means of compressed air. The hand pumps are provided for emergency use in case of failure of the air compressor or power pumps. Heater pipes are provided in the oil and water tanks through which the exhaust gases can be circulated.

With this unit it is possible to completely service the largest airplane now in use in the air corps in approximately three minutes' time. This servicing includes filling the gasoline tank, supplying oil and water of the proper temperature, and furnishing air for the tires. The truck has considerably greater mobility than the quartermaster trucks now used for this purpose, and due to the large tire surface the truck will not cut up the landing field nearly as much as would the conventional solid tired vehicle.

The flexible joint developed in our organization is much lighter than any commercial product for this size pipe, and is leakproof. We also have installations with special types of pumps mounted upon them.

Handling Lub Oil

In an interesting type of construction but little known, which is particularly good for handling lubricating oil, a type of welding is used by which the tank is fastened together so the seams do not show. This particular unit is of the three compartment size. The piping does not show, as this is carried in the skirt of the tank which covers the piping and creates an opportunity for heating in cold weather so the oil may be kept warm. This skirt could also be applied for the handling of fuel oils. It forms a sump which acts as a reservoir in case of accident. This type of construction gives an all steel mounting and provides a three point suspension. The latter being obtained by mounting the tank on a special hanger. Within the past few years the reliability of the truck has created the possibilities of carrying heavier loads, and enabled many companies to make a saving by going to heavier units. The possibilities of going to a heavier unit in some cases, however, is limited in many states by laws. These laws create opportunity for individual application of various types that may do a job better on one locality than would be possible in another. This has resulted in a close study on our part of various state laws, and various types of possible installations.

After coming in contact with applications of this kind the thought occurred to me that it might be possible to save considerable weight if advantage was taken of the bulkhead and surge plate weight by extending them downward to serve as a carrying member for the rear wheels, and supporting member on the fifth wheel. After studying various existing designs this was found to be possible, that is, a large saving in weight, which resulted in our building two units of the frameless tank design.

Type of Tractor

After deciding upon the type of tractor that was to be used we decided that the rear axle of the trailer could be serviced better if it were interchangeable with the rear axle of the tractor. The result was that we adopted interchangeable parts for these two units, and have the assurance that it can be serviced at any point throughout the country without any great difficulty from the standard parts that enter into the construction of the tractor itself.

To protect the tank from shocks of the road and the vibrations encountered in such a unit we have taken advantage of and adopted the rubber shock insulator principle. The semitrailer springs and the fifth wheel are mounted in rubber. In addition to taking the starting and stopping shocks, and relieving the constant towing shocks when traveling over rough roads, the rubber mounting carries a direct load on the rubber cushion which absorbs much of the energy of road shocks.

There is also a very appreciable side wrenching shock on the fifth wheel, which is imparted when one of the trailer wheels strikes an obstacle, which the rubber block dampens and absorbs.

It has been found that under these conditions rubber will absorb in the neighborhood of 50 times as much energy as steel because of its inherent quality to withstand deformation and return to its original shape unaided.

Action means long life for rubber, far beyond its allotted time when idle. Compression has the effect of insuring that all its molecules will be stressed and, therefore, in action under working conditions. When under a certain degree of compression it will stay alive because it continually works internally. It is thought that these blocks have an indefinite life in this type of construction compared with other shock absorbing units that have been employed up to the present time for similar classes of work.

We employ air brakes on all heavy units of this type, and arrange them so the pressure is carried direct to the trailer tank and acts on those brakes also. This gives a very good control over the entire unit. We have used directly behind some units, two trailers and surrounded with the proper safety facilities we can see no reason why this type of operation is not entirely safety and feasible. It certainly promotes a direct way of hauling material cheaper, which naturally must be reflected in a period of time to the final cost of gasoline to the public.

Hauling two trailers, under some types of conditions, and under some loads, is entirely possible and satisfactory results have been obtained. Chains are used as a safety precaution against the tank getting away from the tractor in case of the fifth wheel breakage or failure. We also employ chains between all tractors and trailers for a similar purpose.

Six and Eight Wheels

Another type of tank truck that a truck manufacturer is experimenting with at the present time, indicates the possibilities provided restrictive regulations are not too severe. This indicates the possibilites of using eight wheels. The tractor employed is of the four wheel drive type. It has a different type of fifth wheel than I have had the opportunity to see before. It is of the ball and socket type. There are certain mechanical features in favor of this, particularly from a standpoint of lightness in weight.

Shorter wheel bases may be employed if six wheels are used directly upon the chassis. We have in our service some units of this kind that have given very favorable results.

The disadvantage of this type of vehicle, particularly from a standpoint of pulling extra trailers, is brought about through the two extra wheels removing a certain amount of traction from the driving members. I am inclined to be-

*Before American Petroleum Institute, Chicago.

lieve that automotive engineers will solve this problem through changing the drive so that power will be supplied to all four wheels.

Supervision

Probably the most reliable method of investigation is to compare actual performance of one chassis with another, over ground or road conditions that are a duplicate from a standpoint of operating conditions. In talking with supervisors it is surprising to learn just how much of this work is being done, and the amount of duplication that is taking place. A simple interchange of ideas among a group of operators through the A.P.I. would no doubt result in individual contacts being made that will result in economies being effected.

Probably the greatest proving ground is through use in actual service. The manufacturers, to a large degree, have an opportunity to gather valuable ideas from supervisors under whose supervision such equipment runs. But it has been surprising to me to find that in a number of instances where important improvements have been suggested, that a decided stand has been taken by such manufacturers that the supervisor knew but little about his own operation. We have special test courses and methods that have been established for years, and our investigations give us an opportunity to carefully compare one type of chassis with another.

In the past many concerns have considered that where equipment of this kind was used, but very little consideration had to be given to the cost of operation. It was felt that the "needs" of getting material in to serve the field force justified the "ends," and that expense was but a minor consideration. However, there are types of equipment much better suited than others, and if the greatest economy is to be obtained we have to forget some of the lessons learned four or five years ago from the operation of four wheel drive, caterpillar drive, and other types of equipment, and consider there are equipments on the market today that will meet the needs for this class of work.

In the marketing end of the business, barrels and package goods are items for daily delivery. Rapid strides have been made in body construction for this class of work, and if a durable body is to be obtained we have found through building our own that the all-metal type of construction will best serve the needs in the majority of cases. It is practically impossible to get lumber that will stand up. There is but very little difference in the weight, or in the cost of construction, provided careful supervision is given to various details before the job actually enters the shop.

Standardization

From the operators' standpoint, probably the outstanding thing that the manufacturer could do to serve the oil industry better, and the same ideas would probably be of benefit to many other operators, if it could be so arranged that they would agree among themselves to:

1. Have a series of standard wheel bases;
2. Have a series of standard frame widths;
3. Have a series of standard lengths behind the cab.

In the majority of cases in the oil industry, the body outwears the chassis at least two to one, and where new equipment is bought, if changes have been made from one type, or design, to another, or where it is desired to shift from one manufacturer's piece of equipment to another, a great deal of delay and expense is involved in changing the mountings on the body, and in many cases the body itself becomes a misfit from a standpoint of load distribution, to such a degree that it has an ultimate effect upon the operation of the vehicle itself. This reacts on the manufacturers through a continued service problem which is costly to them as well as the operators. Closer study and perhaps some compromises on their part in their design, would tend to do away with this type of problem that so many of us encounter. Another serious consideration in connection with the operation of equipment is that the manufacturers adopt for given types of loads, tires and wheels of insufficient carrying capacities to meet state laws throughout the country. It has been a notorious fact up to the present, that the first cost of the chassis did not by any means represent the final cost. The majority of vehicles placed on the road have been undertired, with the result that specifications calling for special equipment for front and rear wheels, in many cases, has been required.

The operation of equipment of all types requires a great deal of care. Their operation covers a wide range of activities, directing a group of personnel from the washer, tank wagon driver, and skilled mechanic. It covers the activities of a running or repair upkeep force, that in many instances are classed as inspectors. It also covers the many and various details of shop operation, of analysis of cost operation, etc.

In the operation of tank wagons, if the industry is not to be eventually placed under restrictive regulations, it is essential that all companies give this type of operation careful consideration from a safety standpoint.

Safety work of this kind is never wasted, even though an employe may have only the possibilities of short service with you, the lessons he learns will be carried on to other lines of activities, and in the majority of cases this line of activity will be in some way connected with the automotive industry. The higher the degree of safety obtained in the operation of equipment and handling of petroleum products, the greater the opportunity for the expansion of the industry, and this, in the last analysis, is the point we should all aim for. Co-operation among ourselves and with other interests along those lines will be to our mutual benefit.

TESTING REDUCTION OF BREATHING LOSS

(Continued from Page 195)

the direction of the Bureau of Mines with the co-operation of the State of Oklahoma.

The Phillips Petroleum Co. assisted in the preparation of this report by furnishing the oil and tanks for several of the field tests.

Ben E. Lindsly, acting superintendent; F. W. Lane, petroleum chemist; and E. L. Rawlins, associate natural gas engineer of the Bartlesville station of the Bureau of Mines, assisted in the preparation of the report with valuable suggestions and criticisms. Peter Grandone, junior chemist, and H. M. Thorne, assistant petroleum chemist, assisted in collecting the field data and made the distillations and gravity determination. The drawings were prepared by John Trevorrow and J. M. Seward of the Bartlesville station.—Reports of Investigations, Bureau of Mines, Department of Commerce.

INVITE CONSERVATION BOARD TO TAMPICO

(Continued from Page 50)

the conservation regulations, through its inspectors and petroleum engineers.

"The Mexican Department of Industry, Commerce and Labor will give all its support to the association for the Tampico meeting, and will make arrangements with the proper authorities to insure the members of the association the following advantages:

"All kind of facilities will be extended at the border by the Immigration and Custom House officials to the members of the association and their families on their way to Tampico. The railroad companies will sell excursion tickets, valid for a month, at reduced prices. The leading hotels in Tampico will make reservations for the members of the association, at moderate rates; not more than $3 a day per room. The living expense are now very low in Tampico. The oil companies will extend a general invitation to the members of the association, in order that they may visit the Ebano and Panuco oil fields, near Tampico. The Tampico authorities, the Chamber of Commerce, the University Club, the Country Club, the Casino of Tampico, etc., will co-operate to the best success of the social part of the convention, all the members of the association will be the guests of the town.

"I earnestly hope that you will realize the importance of the above mentioned facts and that you will be kind enough to give your valuable suport to my initiative, to the effect that our association may hold a convention in Tampico during the first days of November 1928.

"In case you agree to my proposition, kindly let me know of your approval, in order that I may send to you a printed circular letter of invitation, signed by the president and the secretary of the association to be mailed to all the members and to all the officials of the Conservation Bureaus that you may deem advisable to invite, requesting them to express their opinion on the matter and to send their answers to your Shreveport office.

"I expect that by this method we may reach a resolution in due time, and I suggest that in case we get a majority vote favoring the Tampico meeting, you may name a committee that will take care of the necessary arrangements in the United States, assigning to me the commission to attend to all the details concerning the accommodation of the convention in Tampico.

Very truly yours,
"MANUEL J. ZEVADA."

HOLIDAY LULL IN REFINED OIL MARKETS

(Continued from Page 44)

stocks are actually taken as just so much potential gasoline.

One thing seems certain, however, in looking into the new year. The Seminole Field has been defined, and even though the declining crude production there is made up by the increased production in West Texas, refiners will be less anxious to run this oil because of the greater expense involved in refining and the lesser gasoline yield. While 42 per cent gasoline is regularly made direct from Seminole crude, 30 per cent gasoline would appear to be a good average from the West Texas crudes in general. This means from 20 to 25 per cent of the present gasoline production from those refineries running Seminole oil will have to be made up either by running more crude or increased cracking facilities. This difference appears too great to be made up readily by even a combination of these since it would be difficult for refiners to move the other products. As a result, gasoline prices in the Mid-Continent stand a good chance to rise gradually more in proportion than the other refined products.

With an overproduction of fuel oil even at present and with greatly increased production of heavy crudes promised in West Texas and California, together with the better outlook for the clearing of the Mexican situation, fuel oil prices seem doomed to hang at a relatively low level throughout the greater part of next year.

Crude and Fuel Prices

If crude prices are increased it is probable that fuel prices will not be raised in proportion. Gas oil prices react with the fuel market, in general, but are influenced by gasoline prices as a cracking stock. The high stocks built up at many refineries this year seem to be the only factor tending to hold its price from showing an advance should gasoline prices move fractionally higher.

There seems to be no relation between the market price of gasoline and kerosene, and it would be difficult to predict a general change over the next few months. There will be a gradual increase in the consumption in the rural districts which will tend to raise prices, but production will likewise increase as less furnace oil is manufactured. Refiners also decrease the production of the low endpoint gasolines as the winter demand for these decreases.

Lubricants have moved fairly well during the past year, and although prices were lower than during previous years, their prices were not decreased in proportion to the other products. Compounded oils have represented the bulk of the total volume moved, and it is likely the price on compounded oils will show only a gradual change over a small range because of their production being centered in relatively few plants. The curtailment of production of neutrals along the Gulf Coast in the middle of the winter season when zero cold test neutrals are in greatest demand shows that present prices there are below the cost of production in many cases. The Mid-Continent refiners might assume they have already witnessed the full weight of this competition.

Cylinder stock prices have been maintained well throughout the year and as the production of the choice cylinder crudes continue to decline prices might be expected to be maintained at a relatively high level. Premiums of 25 cents per barrel are being offered for these crudes at present. Refiners find it more profitable to run their bright stock plants at capacity than to curtail production, and this has been done in some cases through price concessions.

Bright stocks are being freely offered and no strengthening is apparent for the immediate future. Wax stocks are normal, yet prices are relatively low. The exports for the year have fallen off slightly based on the shipments over the first 10 months, and because of the increasing foreign competition refiners will have to depend more on the domestic market to support the movement. In turn, the domestic consumption seems to be very sensitive to price changes.

Gasolines and Naphtha

There was no price change in this market, the movement being the slowest during any week this year. While U. S. Motor gasoline was generally quoted below 6 cents, there was no evidence of prices going below the 5¾ cents established last week as the low. Some moved into differential territory at one-eighth cent below this at various times over the past two weeks, but refiners were forced to take very little of this business. Naphtha moved very slowly.

Natural Gasolines

Grade A was a little stronger, but this did not hold true for the cheaper grades. The small production of this grade, coupled with export inquiries for it, gave it this added strength. The C grade reached a new lot at 3½ cents and some was offered at a still lower price. Refiners are slow to buy even at these prices because they desire to hold down their inventories and do not need much for their current shipments.

Kerosene and Distillates

Although no price changes were made over the week, kerosenes were noticeably weaker. At present consumption is at a low point in the seasonal fluctuating demand and there is little likelihood of an active market in this product until early spring.

The better grades of distillates moved well at slightly higher prices and this product was the only one showing marked activity. Some refiners report shipments are rapidly depleting their stocks and production is being maintained at a maximum.

Gas Oil and Fuel Oil

These continued to be freely offered and slight price concessions were reported on the heavier fuels in some cases, showing the lack of confidence in this market picking up readily. The low prices reported were for 16-18 gravity fuel, being 67½ cents per barrel.

Lubricants and Wax

These also moved very slowly. There were no price changes and it is not likely that lower prices would serve to stimulate trading as consumption is slow and jobbers are not anxious to increase their inventories.

Late Fields

OKLAHOMA

On Christmas day the production of the Greater Seminole region touched the lowest figure which has been recorded in some time when it made 362,501 bbls. The output of the pools ranged from 370,153 bbls. to 362,658 bbls. for the remaining days of the week. By pools the production on December 27 was as follows:

Little River	37,774
Bowlegs	109,755
Earlsboro	139,412
Seminole	56,007
Searight	21,109

Total barrels from 1,058 wells.....364,057

The late completions were of small initial output, with a few significant dry holes to be added to the Little River operations. The Phillips Petroleum Co.'s No. 1 Fore, SE cor. NE NW Section 35-8-6, is a dry hole full of water in Wilcox sand at 4,370-74 feet, and on the same lease, No. 2, NE cor. SE NW Section 35-8-6, is also a hole full of water in this sand found at 4,265-90 feet. These wells eliminate any chance of production spreading to the northwest trend from Little River. To the northeast of Little River, the Indian Territory Illuminating Oil Co.'s No. 3 Phoebe, SE cor. SW SE Section 36-8-6, is a poor well making 190 bbls. of oil and 160 bbls. of water from sand at 4,408-09 feet.

In the Osage County fields, there were two new developments, the Peters Petroleum Co. completed a good well in No. 8, SE cor. NW Section 17-27-6, in the Burbank district. It had sand at 2,943-50 feet, and flowed 1,600 bbls. natural.

In the part of Osage County which was at one time offered to the Federal Government for a naval reserve, the Kay County Gas Co. (Marland) has a gas well in No. 2, NE cor. SW Section 22-24-7, where sand was found at 1,199-1,205 feet, with 21,000,000 feet of gas. Kay County Gas Co has only the gas rights on this land.

Southwest of Cushing in Creek County, the Shaffer Oil & Refining Co.'s No. 2 Skinner, SW cor. SE Section 31-17-5, had Wilcox sand at 4,234-40 feet, and flowed 753 bbls. of oil which was cut 2½ per cent.

An important showing in a wildcat well was found in the Dixie Oil Co.'s No. 1 James, NE cor. SW Section 15-4-1, in Garvin County, 8 miles north of the city of Pauls Valley. This well had 160 feet of oil in the hole at a total depth of 4,201 feet. The exact correlation of the formation which held the oil has not been determined, as samples have not been examined. The consensus of opinion seems to indicate that the stratum is the Hunton lime.

This is the first encouraging sympton which this region has experienced, and the land around this locality has been under lease for about two years. Garvin and McClain Counties were heavily leased about 18 months ago.

KANSAS

In Marion County, Loriaux & Irwin have a promising well in No. 1 Weston, SW cor. NW NW Section 23-17-4, which had chat 2,355-2,365 feet with a show of oil at 2,385-2,390 feet with 200 feet of water in the hole; and 2,395-2,409 feet with a show of oil and the pay 2,409-2,420 feet. The well swabbed 100 bbls.

PENN MEX DRILLERS MADE ROTARY RECORD

A letter from F. J. Huffman, vice president-treasurer of the Penn Mex Fuel Co., Pittsburgh, tells about a performance in rotary drilling which has possibly established a record for time. The well was drilled in old Mexico and completed at a depth of 2,290 feet, which was drilled in 40 hours from the grass roots to the required depth. The letter follows:

"I have just returned from one of my regular trips to our producing properties in Mexico, and while there this trip I witnessed what I believe to be the world's record in drilling with a rotary outfit, and I am going to pass it on to you for publication or otherwise, because we are proud of the record made by the boys on this job.

"The well was our Alamo No. 29, equipped with standard wood derrick, 117-foot, Ideal rotary and draw works, two Oil Well Supply Giant mud hog pumps, Oil Well Supply rotary swivel and string of 4-inch rotary pipe. The work was in charge of our foreman, George S. Fertner, and the drillers were H. A. Boutwell and W. S. Gattrell. The hole drilled was for 8¼-inch casing.

"Mr. Boutwell spudded in at 2:30 Friday afternoon, November 25, and for about three hours fought the surface gravel until he had actually worn out two fishtail bits in the first 96 feet. He then put on a new bit, and when he left his tour at midnight he had 246 feet. Mr. Gattrell then came on tour, and after considerable delay in discussing with Mr. Fertner the advisability of putting in surface casing to overcome the caving of gravel he went to work without putting the casing in and at noon on Saturday he had drilled 1,011 feet. Mr. Boutwell then came on and during his tour to midnight drilled 920 feet. At daylight the next morning, Sunday, November 27, 40 hours after spudding in, the well was 2,290 feet, which was all the depth we had been given in our original government permit."

BURMAH-SHELL COMBINATION

Negotiations are being conducted in London between the Burmah Oil Co., Ltd., and the Royal Dutch-Shell group for a fusion of their marketing interests in the whole of India, excluding the Chittagong and Burmah markets in order that the close association in marketing which existed between the parties since 1905 may be put on a permanent basis.

OIL WIRELESS IN VENEZUELA

An American oil company recently presented a petition for permission to establish wireless stations between Maracaibo and its workings in the oil fields, to which the government has acceded with certain reservations concerning the use of such stations.

FIRST ROTARY RIG WAS USED TO DRILL FOR WATER AT NEW ORLEANS

The first rotary drilling outfit in use in the United States "made as much hole" in a day as many of the modern rigs used in the oil fields.

The first fishtail bit was built by a Texas blacksmith working under the direction of drillers.

These early-day developments are vouched for by J. O. H. Bennette of Conroe, Tex. Mr. Bennette, while visiting his son, Howard Bennette, managing director of the Western Petroleum Association, in Tulsa during the holiday season, explained the conditions which led to use of the rotary principle in the drilling of oil wells.

In 1884, according to Mr. Bennette, the American Well Works was asked to furnish equipment for the drilling of water wells at New Orleans. Due to the alluvial deposit in that section the ordinary method of drilling water wells was not satisfactory.

The American Well Works finally designed a drilling rig which had all the essential features of the rotary drilling rigs which have been in general use in the oil industry ever since the Spindletop, Tex., development starting in 1900. Mr. Bennette was working in the Aurora shops of the American Well Works at the time and aided in designing the drilling rig.

When the rig was completed he was sent to New Orleans to operate it. Nine wells were drilled for a brewery and hotel. The first rig did not have a drilling bit. The drilling was accomplished by a shoe with serrated edge attached to the pipe. In the alluvial deposit no difficulty was experienced in drilling. Over 300 feet of hole was drilled in one day at one of the wells. The wells varied in depth from 300 to 1,000 feet.

Later Mr. Bennette drilled a water well in South Carolina with the rotary equipment. Early in 1886 he took a rig to drill a water well at Hondo City, Tex., which is 50 miles west of San Antonio. In drilling this well a harder formation was encountered. The serrated pipe failed to drill through this formation.

Mr. Bennette said that he and his partner, J. C. Baldwin, at this time conceived the idea of using a drilling bit. The first bit was an adaptation of a 2-inch auger which a blacksmith was making for use in making shallow tests for water. With the new bit no difficulty was experienced in completing the water well to a depth of approximately 1,000 feet.

Later the rotary was used extensively in the drilling of water wells in the South and Southwest. When oil was discovered it was quickly adapted for use in the fields. Mr. Bennette used a rotary in drilling the early wells in the Sour Lake Field of Texas.

TO SUPPLEMENT SUPPLY WITH COKE OVEN GAS

PHILADELPHIA, Pa., Dec. 24.—The United Gas Improvement Co. was authorized by the city council's committee on lighting to supplement its present municipal gas supply with coke-oven gas, a step which engineers predicted would mean a lowering of the gas rates within a few years. Plans call for the building of a coke oven plant to cost at least $7,000,000 to supply about 5,000,000,000 cubic feet of gas a year, as a substitute for a like amount of the water gas now used.

HARRISBURG, Pa., Dec. 24.—Consolidation of interests of the United Gas Improvement Co. and the Philadelphia Electric Co., on the basis of an exchange of two $25 shares of the electric stock for one $50 share of the gas stock, was approved by the Public Service Commission. The deal brings together two corporations operating in 28 states and having a total capitalization of about $200,000,000. The Philadelphia Electric Co. will retain its corporate identity.

At a special meeting of United Gas Improvement stockholders, the capital stock was increased from 2,130,088 shares to 6,000,000. Directors were also authorized to issue 1,859,061 shares of the company stock, or any part thereof, in exchange for about 3,700,000 shares of the electric company.

TURKISH OIL PROSPECTING

The Turkish Bank of Industry and Trade is undertaking a detailed investigation of oil occurrences in the neighborhood of Murefta, Anatolia. It has engaged two American experts who are carrying out systematic prospecting work around Tekirdagh, Murefta and Sharkoi. The nature of the occurrences gives hope of success in drilling.

RED SEA PETROLEUM CO.

The report of the Anglo-Egyptian Oilfields states that a subsidiary company has been formed, called the Red Sea Petroleum Co., Ltd., to acquire a concession in the Farsan Islands granted by the ruler of the Idrissi in whose territory they are situated. The geological reports received are said to be sufficiently promising to warrant the drilling of a test well.

Year's Gas Sales Up 20,000,000 Feet, Making New Record

Preliminary estimates of the sales of manufactured gas for the present year reveal an increase of 20,000,000,000 feet over the record-breaking total of 455,000,000,000 feet registered for 1926. These figures, compiled by the American Gas Association, have just been released for publication by Oscar H. Fogg, president of the American Gas Association.

The record output of 475,000,000,000 feet will be apportioned as follows: Household consumption will have taken 334,000,000,000 feet, 135,000000,000 feet will have been used for industrial and commercial purposes and 6,000,000,000 feet will have been used for miscellaneous purposes at the close of the year.

"Again, as in the past," Mr. Fogg said, "the use of gas for commercial and industrial heating applications continues to show phenomenal growth, the amount consumed in 1927 representing 28.4 per cent of the total gas sales for all purposes, or an increase of 9,000,000,000 feet. Manufactured gas companies now serve 11,400,000 customers representing an increase of 350,000 over 1926. Miles of main total 91,000, invested capital $2,700,000,000, and gross operating revenue $520,000, an increase of $2,000,000 over 1926.

"The manufactured gas industry has not reported a decrease in annual sales or annual gross revenues in 21 years," Mr. Fogg stated. "Sales have increased 352 per cent in 25 years, while the population of the country has increased only 50 per cent. Total sales per capita have increased 70 per cent in 10 years, reflecting a growth in sales per customer as well as an increased number of customers.

Since the amalgamation of the Natural Gas Association of America with the Amalgamated Gas Association, the latest consolidated figures show annual sales to be 1,714,000,000,000 feet, customers served 14,731,000 and gross revenue $785,000,000.

"Opinion is unanimous among leaders of the industry that, barring no serious let-down in general business in 1928, the gas companies will continue to consolidate their gains and further expand their facilities to take on additional business. The trend from solid fuel to gas is showing increased momentum and the new year is expected to at least duplicate the record made in 1927.

Coal Displaced by Gas

"Leading gas engineers are now trying to disprove what has long been considered an almost axiomatic theory, that coal is fuel. The contention is that coal, which must for thousands of years remain the chief energy resource of the world, is an essential raw material from the social, scientific and industrial viewpoints.

"Basing their conclusions on the fact that from 1815 to 1914 the white population of the world increased threefold, while the production of mineral fuels, coal, oil and natural gas, increased 75 times, they foresee the time when burning of raw coal will be prohibited.

"Giant gas plants situated at strategic points throughout the country where coal is easily available and a network of gas mains distributing clean gas at high pressures over long distances is an accomplishment of the near future, it is believed. Already sufficient knowledge is at hand to prove the practicability of this endeavor. Two gas mains from Ohio to West Virginia 300 miles long distribute natural gas at relatively high pressure.

"Another natural gas line now under way will be 450 miles long and will pass gas at 450 pounds pressure."

NEW ZEALAND GASOLINE TAX

Under the new gasoline tax of 4 d. (8 cents) per imperial gallon, which became operative throughout New Zealand in November, provisions were made by which gasoline for certain industrial engines and launches is exempt from its payment.

PETROLEUM DEVELOPMENTS DURING THE PAST MONTH

(Continued from Page 47)

The October shipments were distributed as follows:

To the U. S. A.—	Barrels
New York	693,150.13
Baltimore	166,878.66
Charleston, S. C.	75,476.84
Total U. S. A.	935,505.63
To other countries—	
Montreal	408,507.83
Halifax	163,081.05
Southampton, England	131,784.54
Total other countries	703,373.42

The percentage of oil exports destined to the United States appears to be increasing slowly. During October 57 per cent of the exports went to the United States compared with 55 per cent in September and 44 per cent in August. Twenty tankers called during the month, the average cargo of 81,944 net barrels being larger by about 2,000 barrels than the average cargo of the preceding month.

The status of the Yates Anglo-Persian contract is still uncertain although Minister Montalvo's unexpected success in passing the emergency petroleum bill of which he was the active sponsor has given much concern to the more conservative minded Colombians and all commercial petroleum interests.

While the full terms of this contract have not been made public it is understood that by its general makeup the exploitation and development of the region of Uraba from the Atlantic to the Pacific Ocean paralleling the Panaman-Colombian border, drilling 100 wells in the first four years, construction of a refinery and paying the Government 20 per cent royalties are included.

On the action of the Colombian Congress in its next session in passing permanent petroleum legislation depends the entire future of the industry in Colombia. It seems strange that with the example of Mexico so prominent, Colombian legislators should be so shortsighted as to insist upon identical legislation which practically prohibits the development of this infant industry which promises so much for the economic and social welfare of the nation.

Panama Gasoline Duty

In Panama the sale of gasoline is to be restricted in the advance by the Republic in the import duty on this product to 15 cents per gallon, authorized in the provisions of a contract entered into between the National Government and Berrocal & Company, Limited, which was to have become effective on November 1, but which has now been deferred until January of the coming year by an executive decree recently issued. This action is the result of protests by the Chauffeurs Union, and retail dealers of gasoline, motor cars and accessories.

Record Russian Exports

Soviet oil exports for 1926-27 (fiscal year ending September 30) amounted to 2,038,000 metric tons, breaking all records for Russian oil exports.

Compared with 1913, Soviet oil exports show a gain of 123.4 per cent. In comparison with 1904, which was the previous record year for Russian exports of oil, exports for 1926-27 show a gain of 11 per cent. After attaining the record figure of 1,837,100 metric tons in 1904, Russian oil exports showed a large decline and during the succeeding 10 years never exceeded 1,000,000 tons.

Soviet oil exports for the past five years were, in metric tons:

1922-23	309,716
1923-24	723,176
1924-25	1,337,100
1925-26	1,473,150
1926-27	2,038,000

Exports for 1926-27 were composed principally of fuel oil and gasoline (68 per cent of the total) the bulk of the remainder being made up of kerosene (21.5 per cent) and lubricating oil (9.8 per cent).

In comparison with 1925-26 exports increased during the past year 38.4 per cent. Especially large has been the increase for lubricating oils (56.7 per cent), gasoline (47.5 per cent) and kerosene (43.5 per cent). Exports, by kinds of oil, for 1926-27 (in metric tons):

Gasoline	600,000
Kerosene	438,000
Lubricating oils	168,000
Fuel and other oils	832,000
Total	2,038,000

Of the exports for 1926-27 the largest share was taken by Italy, with France and England holding second and third places. Exports, by countries (metric tons):

England	381,000
Germany and other Central European countries	346,000
Italy	477,600
France	386,000
Other	447,400
Total	2,038,000

France increased its imports of Soviet oil over the preceding year 115 per cent, Egypt and India 75 per cent, Baltic countries and Finland 50 per cent, Germany and other central European countries 44 per cent and Italy 25.5 per cent.

Mexican Petroleum Law Amendment Is Passed by Deputies

MEXICO CITY, Mexico, Dec. 27.—The House of Deputies has passed the first reading of a bill sent by President Calles amending Articles 14 and 15 of the Mexican oil regulations. The articles will be amended in accordance with the recent Supreme Court decision in the Mexican Petroleum Co. case.

The amendment, if passed by congress, it is claimed, would definitely remove the main objection by oil companies to the oil law since it would do away with confirmatory concessions for 50 years in exchange for rights acquired by oil companies before May 1, 1917.

The utmost importance is attached to the Calles proposal which was sent to the deputies through the Department of Interior.

In a note to the deputies, President Calles reviews the Mexican Petroleum Co. case and the decision of the Supreme Court granting an injunction restraining the Department of Industry, Commerce and Labor from cancelling certain of the companies drilling permits. He says that the main view of the court is that the Mexican Petroleum Co. could not have applied for the confirmation of its previously acquired rights without the removal of the objectionable restriction which impaired the company's patrimony and was imposed by Article 14 of the law issued December 26, 1925.

President Calles adds that the Supreme Court ruling creates an abnormal situation, the executive being unable to apply the oil law uniformly. He continues that the benefits of the ruling must reach all companies and individuals, even those who have already complied with the provisions of Articles 14 and 15.

Calles Proposals

As the Supreme Court decision establishes the unconstitutionality of certain points of the oil law, President Calles proposes this amendment:

"Article 14. There shall be confirmed without expense by means of concessions the following rights:

"1. Those derived from lands on which oil exploitation works were commenced prior to May, 1917;

"2. Those derived from contracts made prior to May 1, 1917, by owners of the surface or persons under contract to them for the purpose of oil exploitation;

"3. To owners of oleoducts and refineries at present working under concessions or authorizations issued by the Department of Industry, Commerce and Labor; in regard to those concessions or authorizations:

"Confirmation of these rights will be granted without limitation of time, when on behalf of surface owners and for the time mentioned in contracts reached by surface owners and other parties.

"Article 15. The term of one year is fixed from the day following the publication of these reforms until the same day, inclusive, of the following year in which must be sought confirmation of the rights to which the foregoing article refers and which have not been the subject of confirmatory petitions with the period fixed in this article.

"Transitory, regarding confirmations sought with the year 1926 and in respect thereof titles have not been issued; these shall be granted in accordance with present reforms.

"In the terms of the same shall be rectified confirmatory titles already issued."

PRAIRIE ENTERS CALIFORNIA

Entry of the Prairie Oil & Gas Co. into California is forecast with the announcement by Dana H. Kelsey, vice president, of the retention of C. R. McCollom of Los Angeles and W. H. Taylor of Cheyenne, Wyo., to investigate the California oil situation.

The official statement follows:

"Mr. Dana H. Kelsey, vice president of the Prairie Oil & Gas Co. of Independence, Kans., announces the completion of a contract between his company and C. R. McCollom of Los Angeles, and W. H. Taylor of Cheyenne, Wyo., in which the two above named are retained by the Prairie company to investigate the California oil situation.

"Mr. Taylor is an attorney at law who has been associated with the Prairie Oil & Gas Co. in their Rocky Mountain operations for the past 10 years. Mr. McCollom is a petroleum geologist who has been with the Union Oil Co. of California, as chief geologist, for the past seven years, having resigned from that position effective January 1 to make this connection.

HUMBLE CO. TO EXTEND CORPUS CHRISTI LINE

SAN ANTONIO, Tex., Dec. 26.—The Humble Oil & Refining Co. will lay an extension to its line from Ingleside across Corpus Christi Bay and Mustang Island and into the Gulf 2 miles where deep water vessels may be loaded to capacity, according to reports from Ingleside.

The laying of this line across Mustang Island and out 2 miles into the Gulf would give the Humble an opportunity to load deep water vessels to full capacity without waiting for the maturing of plans for deepening the channel at Aransas Pass. That project is now up with the Government, but must be acted on by Congress first and an appropriation made.

In the meantime, Humble has been loading vessels at Ingleside to half capacity and then reloading them at Texas City to full capacity. The line into the Gulf to deep water would permit loading vessels there to full capacity at the first loading. With the oil from West Texas coming into Ingleside along with the oil from Mirando City, Humble has a large amount of oil to handle and it is expensive to use vessels to half their capacity. At the best the deepening of the channel will be the work of many months.

MISSISSIPPI GEOLOGY GETTING ATTENTION

Like northeastern Louisiana, Mississippi is difficult territory for the geologist because of an all but utter lack of logs or well records of any other sort, few surface indications or outcrops. Nevertheless, Dr. E. M. Lowe, state geologist, and geologists active in the state for private interests, have been able to acquire considerable data that will serve as the starting point or foundation for an authoritative collection of geological information. The state department, Doctor Lowe said, has completed a report, due to be out soon, on the underground waters of Mississippi, and the most comprehensive report on the geology of the state in general that has yet been printed—the result of 19 years' work on the part of Federal and state agencies. Also, he said, a report on Mississippi with particular reference to oil and gas possibilities, will be out in a few weeks. Altogether the State Geological Survey has printed 20 volumes and innumerable bulletins, or reports on different phases of Mississippi geology and natural resources.

The Mississippi Geological Survey is struggling along with an annual appropriation of about $7,500 per year and one of the requests of the new oil and gas association of the next Legislature will be an increase to $30,000 or $40,000 per year and transfer of the state geologist from a professorship in the State University to a full time assignment to the survey. The last Alabama Legislature appropriated $30,000 for the year's work for the state survey, $40,000 for the second year and $50,000 per year each year thereafter. Several years ago a commercial gas field was uncovered in northwestern Alabama but through ignorance of oil and gas technique and practice and total lack of conservation regulations, was permitted to be flooded by salt water.

PULVERIZED COAL FOR SHIPS

European interest in modern methods of ship propulsion was shown by observers from England, France, Germany, Italy, Norway, Sweden and Holland who were sent to investigate the possibilities of pulverized coal when the American freighter Mercer docked at Rotterdam on its recent trip from New York and Philadelphia.

MANCHURIAN SHALE OIL

According to a published statement of the vice president of the South Manchuria Railway Co., the oil shale industry has been dropped from the company's estimates for the next fiscal year, which begins April 1, 1928. The announcement continues that this does not mean that the enterprise has been abandoned, but that it will not be taken up until it can be maintained on a paying basis.

TO BUILD TANKS IN ICELAND

The Anglo-Persian Oil Co. has obtained a concession to build oil tanks with a capacity of about 2,200 tons in Reykjavik. The tanks will be erected this winter by an English firm. The company also intends to construct smaller tanks elsewhere in Iceland, e.g. in Isafjord and the Vestmanna Islands.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

SPLIT REFLUX OPERATION OF BUBBLE TOWERS

Would you kindly describe what is meant by the split reflux operation of bubble towers on crude oil stills?—G. N.

When operating a series of towers it is possible to use all or part of the reflux from one tower as the charge for further separation and as a medium for controlling temperature in another tower. Under some conditions, which are largely a matter of the composition of the charging stock and the design of the towers, there may be more than enough reflux necessary to accomplish one object so a division or split is made. Sometimes the reflux is returned to the preceeding tower because there is enough light product present to warrant but at the same time the quantity is so large that temperature balance would be destroyed if the entire reflux were returned. Some refiners return part of the reflux to the same tower and the remainder to the next, or hotter, tower. The use of split reflux operation is practiced to a large extent in the preparation of special naphthas and kerosenes. An example of this may be found in the descriptive article by C. O. Willson, The Oil and Gas Journal, page 158, December 8, 1927.

A further illustration is quoted from Special Naphthas With Pipe Still, by Fred C. Koch, The Oil and Gas Journal, page 135, March 10, 1927.

"The crude kerosene charging stock was split into two streams, one of which exchanged with the residual gas oil bottoms and the other with the vapors from No. 2 bubble tower. These two hot kerosene streams then combined and were charged into the first bubble tower where they flowed down over the decks and were stripped of their heavy naphtha content. The hot oil was then back trapped into one side of the first compartment drum which acted as a reservoir.

"This material was then charged by means of hot oil pumps through the No. 1 pipe still and into the other compartment of this same drum where vaporization took place. The vapors entered the base of the column and the heavy naphtha vapors were taken overhead and condensed. A portion of this condensate was pumped from the reflux drum back onto the top deck of the bubble tower to furnish the necessary cooling.

"This tower was operated under about 20 pounds pressure, the pressure being controlled by means of the valve on the run down line from the reflux drum.

"The kerosene with the heavy naphtha fraction removed was then charged into the No. 2 bubble tower where the 'White Spirit' cut was removed. The arrangement on the back trap drum and pipe still on this second tower was identical with those on the first tower. The 'White Spirit' vapors were sent through a vapor heat exchanger before entering the condenser and reflux drum. After operating the installation it was found that it was advisable to carry the pressure on the No. 2 bubble tower at about 5 pounds lower than on No. 1. The residual gas oil fraction was drawn out of the compartment drum through the bottoms heat exchangers and sent to storare."

INFUSORIAL OR DIATOMACEOUS EARTH

I am sending you a block of diatomite. Am informed that this material is suitable for refining oil and would like to have what information you have on this subject.—C. S. H.

This is a fine specimen of infusorial or diatomaceous earth. This material is not of great value for refining petroleum oils; being used to a limited extent for filtering some petroleum products. However, it is widely used in refineries for insulating furnaces, boilers, stills, towers, pipes and walls because it is not a good conductor of heat. For this purpose it is used in the form of blocks and bricks, also matted with other substances as a felt and to some extent as a filling in the powdered form.

Other uses include; polishing powders, polishing paste and special soaps, also as a filler and for some kinds of packing.

There are many deposits of this earth in the United States and the value of a special deposit depends on local conditions, transportation facilities and cost, and the extent of the market. Your state geologist or authorities at the university may be in a position to give you suggestions of value.

RECLAIMING LUBRICATING OIL FROM CRANKCASE

Your reply to V. W. in the December 8 issue. Why shouldn't a suitable oil be produced by a machine which does just what the refiner does, distills and filters through diatomaceous earth? For it has been shown motor oil that has been used is not worn out but merely diluted and polluted with materials which can be removed by proper distillation and filtration.—A. H. T.

This correspondent brings up other points but space will not permit reproduction of the entire discussion; however, an effort will be made to make clear the previous matter and these points may be included.

It is true that, aside from the question of market price and quality, the principal difficulty to be overcome in the successful operation of a business for the reclaiming of lubricating oil from crankcase drainings, includes the cost of gath ering and redistribution.

The refiner when manufacturing lubricating oil has the advantage of complete knowledge of the nature of the charging stock and the facilities for scientific control. The quantity and characteristics of the crude oil determine in the first place whether or not a commercial lubricating oil may be made, and in the second place just how many grades are possible. The completeness and flexibility of the refinery have much to do with the degree of perfection attained. The very nature of the various methods employed in the separation of the lubricating oil from the crude oil and the methods for the purification, in addition to the volume handled, are such that the same results cannot be expected to be obtained under the conditions existing in a small unit designed for reclaiming crankcase drainings.

The oil drained from numerous crankcases very likely represents many different crudes, a large number of different processes and all kinds of operating conditions which are possible in the modern refinery. Some of the original oil was no doubt of excellent quality and some of it was just the opposite. The oil may have been used in one car for a few hundred miles and in others for several thousand. Actual destruction of lubricating properties probably took place to some extent in all, although it is admitted that cracking does not appear to be very extensive under normal conditions. These facts indicate that identification of the original oil is hardly possible and exact duplication not probable.

NATURAL GAS UNITS

Has there ever been any move made to adopt an abbreviation for 1,000 cubic feet of gas other than 1,000 cu. ft.? If not it might be well to make use of some symbol. Per 1,000 watts is written per kw. Per 1,000 board feet is per M. Kilo is the French word meaning one thousand and M is the Roman numeral for 1,000. How would it be to refer to 1,000 cubic feet of gas as M or K? for instance, the gas contains 8 gallons of gasoline per K? This practice would save much ink, space and time.—R. H. G.

We have seen the letter M used to designate 1,000 cubic feet and M^m to designate one million. However, this may be due to the common practice of representing 1,000 by M as you have mentioned for board feet. The suggestion is a good one which should receive consideration by the National Gas Association or the Petroleum Institute.

There are additional reforms which may be included; such as the units for expressing composition and the basis for showing heating value. Hydrogen sulphide is usually reported in terms of grains per 100 cubic feet; composition is reported in per cent both by volume and weight; heating value is expressed as B.t.u. per one cubic foot. Gas is usually measured and sold in terms of 1,000 cubic feet.

An effort is being made for the general adoption of the metric system of weights and measures and if this is ever accomplished there will be much simplification of the present terms.

VAPOR PHASE REFINING AND VAPOR PHASE CRACKING

Please explain what is meant by vapor phase refining as distinguished from vapor phase cracking.—M. B.

Vapor phase refining is a term usually applied to the fuller's earth treatment given cracked distillates to render them more color stable and usually replaces rerunning and the chemical treatment. In this operation, the cracked gasoline vapors are taken directly from the tower and passed through a bed of fuller's earth where certain impurities are absorbed and the treated gasoline vapors are then condensed and stored as finished gasoline.

Vapor phase cracking is distinctly different from vapor phase treating. The former involves the breaking up of the complex heavy hydrocarbons, such as gas oil and fuel oil into simpler ones to produce gasoline and fixed gases. Vapor phase cracking is different from the ordinary type of cracking in that vapor phase cracking is carried on at atmospheric pressure while the ordinary methods involve the use of pressures as high as 750 pounds per square inch. The phenomenon of cracking seems to be influenced principally by temperature, the high temperatures causing the complicated chemical structures of the heavy hydrocarbons to break down to form simpler ones. This may be carried out with the oil in the vapor state or as a mixture of vapor and liquid. When a high pressure is used the oil tends to remain in the liquid state. When cracking takes place under these conditions a different kind of gasoline is produced than when the oil is cracked with all of it in the vapor state. The term vapor phase cracking seems a little misleading in some respects and is taken to mean cracking without pressure, rather than to distinguish it from cracking the vapor or the liquid. This is true since there is no sharp line of distinction between the concentration of vapor present when cracking takes place in one system compared to that in the ordinary system, except, that in vapor phase cracking there is a much greater proportion of vapor present.

VISCOSITY AND GRAVITY OF FUEL OIL

Could you supply a tabulation showing approximate or expectant viscosity of fuel oils in relation to gravity? How may specification be arranged to obtain the lowest gravity and consequently the lowest price for desired viscosity? What has been the approximate difference in market price between the two grades 14 and 20 gravity during the past year?—J. J. F.

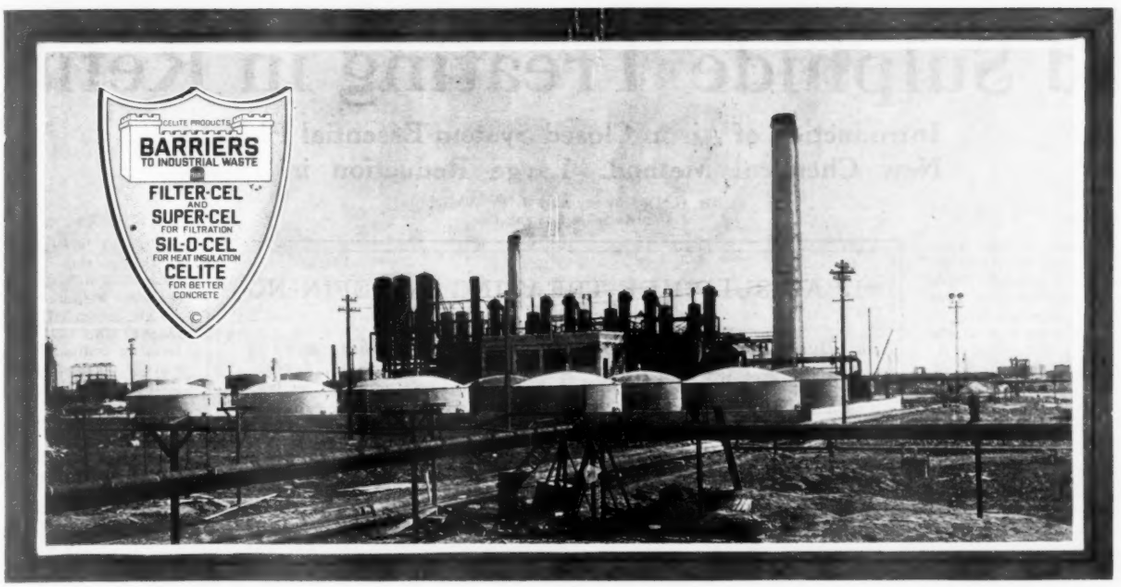
There is no relation between viscosity and gravity of a fuel oil. The viscosity of fuel oils is determined by means of the Saybolt Furol viscosimeter at the standard temperature of 122 degrees Fahrenheit; occasionally determinations are made in the same instrument at 70 or 100 degrees Fahrenheit. The viscosity may vary at the same gravity according to the kind of crude oil which has been reduced and the process which has been employed. Samples of 16 gravity fuel oil have tested 18; 120 and 1,800 when all determinations were made at 122 degrees in the Furol instrument. The pressure still, as a general rule, produces much lower viscosities than the reducing still. When some definite viscosity is desired the refiner usually obtains it by blending fuel oil as reduced from the crude oil with stock which is the residue from the pressure stills, or certain distillates may be used for the same purpose.

No difficulty should be experienced in obtaining any reasonable viscosity that may be desired at the prevailing market price, as based on gravity, provided large enough quantities are purchased. There are specifications which require gravity between 16 and 18 with viscosity 150 at 122 Fahrenheit; also gravity 14 to 18 and viscosity 225 at 122.

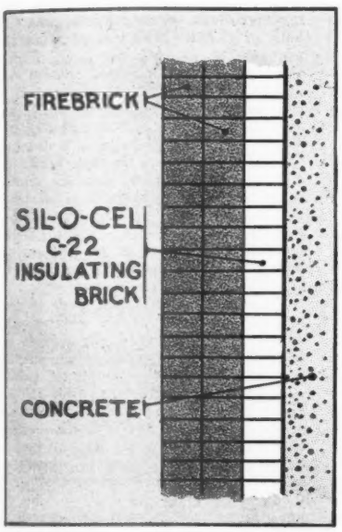
The market price of fuel oil, which is per barrel of 42 gallons, has varied during the past year as follows:

Gravity 14 to 16, maximum $1.1625, minimum $0.70, average $0.893.

Gravity 18 to 22, maximum $1.20, minimum $0.7125, average $0.924.



BUILD LASTING BARRIERS AGAINST HEAT WASTE



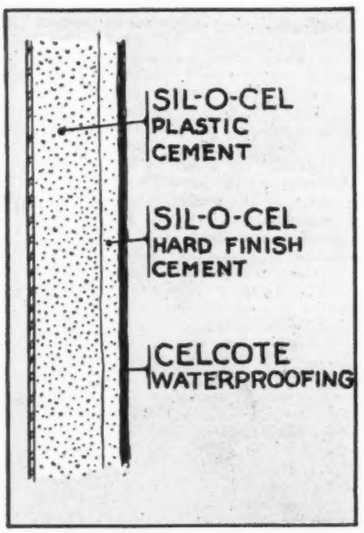
Cracking furnaces and still settings are ordinarily insulated with a course of Sil-O-Cel C-22 brick behind the firebrick.

SIL-O-CEL INSULATING BRICK are ten times as effective at stopping heat radiation as average firebrick. Correctly installed behind the refractory linings of still settings and boiler settings they will serve and save for you as long as you use the equipment.

SIL-O-CEL

Matching the efficiency and durability of Sil-O-Cel brick. Sil-O-Cel insulating block, cement, filler, and "C-3" aggregate for making insulating concrete provide an economical form of insulation for every requirement of re-action chambers, towers and large pipe-lines and for the base construction of furnaces.

Write the nearest service office of the Company for our 192-page data book on heat insulation.



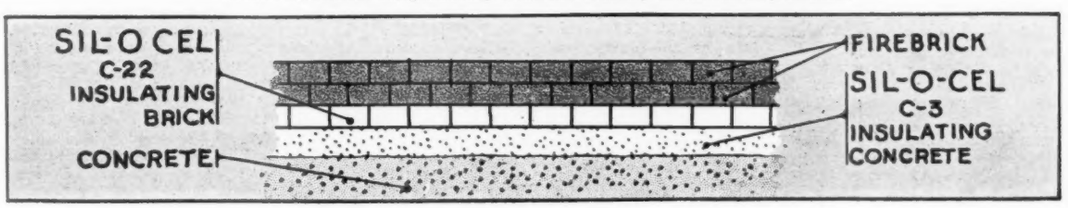
The towers in the refinery shown above are insulated with Sil-O-Cel cement. In many cases these units are insulated with brick cemented to the steel. Either method provides a strong efficient construction.

CELITE PRODUCTS COMPANY

11 Broadway, NEW YORK — 225 E. Superior St., CHICAGO — 1320 S. Hope St., LOS ANGELES

Offices and Warehouses in Principal Cities

Celite Products Limited, New Birks Bldg., Montreal, Quebec
Celite Products Corporation, Windsor House, Westminster, London



Lead Sulphide Treating in Refining

Introduction of Air in Closed System Essential Phase of New Chemical Method. Large Reduction in Losses

By G. L. Rowsey and J. F. Whitehurst
Amarillo Refining Co.

In July, 1924, the plant of the Amarillo Refining Co., located at Amarillo, Tex., began operating on Panhandle crude oil. It was evident from the first that new processing must be adopted, both in the method of distillation and in the method of treating the distillates. At first the corrosion of equipment was excessive, and the export gasoline required an average of 1.2 pounds of litharge per barrel for sweetening. In addition, from 16 to 18 hours blowing was required to bring a batch sweet, and the treating loss frequently ran as high as 7 per cent. The gasoline was exceptionally difficult to treat at this time because the sulphur content of our average crude exceeded 2 per cent, and our distillation temperatures were exceedingly high.

It was evident that a large amount of litharge was required to overcome the hydrogen sulphide, so the practice of caustic washing was adopted. The litharge consumption was cut about 50 per cent. Since the litharge consumption was still excessive, it was decided to try the hypochlorite method, but we were unable to make a finished gasoline with a staple color. Also, "doctor" treated samples frequently became yellow or milky after 15 minutes' exposure to sunlight.

Continuous Treating System

To overcome the excessive evaporation loss, a continuous treating system was installed. Four 12-foot lengths of 12-inch pipe, equipped with stuffing boxes and packing glands were used for mixing chambers and 2-inch shafts with offset mixing blades were used for mixing the treating solution and gasoline. These shafts revolved at the rate of 250 r.p.m. The first two cylinders were used as caustic scrubbers, the gasoline and caustic soda being introduced into the first one, traveling the length of the cylinder, transferring to the second and traveling the length of the second cylinder. From the second mixing cylinder, the mixture of gasoline and spent caustic passed through a settling tank where the caustic solution was settled out and drawn off. The gasoline passed continuously over the top of the settling tank and into the third mixing chamber where the sweetening solution was introduced. The gasoline and treating solution traveled the length of the third and fourth mixing cylinders and discharged into the agitator a few inches above the cone. The treating solution settled and was returned continuously by gravity to the solution box from which it was recirculated. Litharge, sulphur, and caustic soda were added in the solution box when needed. No appreciable savings were made on chemicals, but the treating loss was reduced to less than one-half of 1 per cent.

It was at this time that the introduction of air into a closed treating system was developed. Air was at first introduced with the idea of promoting a more intimate contact between the sweetening solution and the gasoline. However, as it was necessary to use air in quantities small enough to prevent excessive agitation in the agitator and prevent consequent evaporation loss, it was soon determined that the benefits immediately observed were not due to more intimate contact, but to some other undetermined action.

Experimentation developed the fact that 8 cubic feet of air per minute was sufficient for sweetening up 200 bbls. of gasoline per hour. We were already recirculating our sludge doctor containing lead sulphide in suspension, and it was therefore only a matter of laboratory experimentation to determine the action of air and the relative benefits of same when used with doctor solution both with and without suspended lead sulphide. The introduction of air into the continuous treating system immediately resulted in the reduction of the amount of litharge used to about 10 per cent of the amount previously required. Laboratory experiments demonstrated that lead sulphide suspended in caustic soda solution would sweeten gasoline that had been previously washed free of hydrogen sulphide with sodium hydroxide. If sweetening was accomplished by shaking in a separatory funnel, it was necessary to remove the stopper occasionally to admit air. We then began working out a method of control on the new process.

In the meantime, developments were being made in the process of distillation. A method was worked out by which the hydrochloric acid corrosion was almost entirely eliminated and the greater portion of the hydrogen sulphide formed could be taken through the gasoline coil or the naphtha coil at will, enabling us to concentrate the hydrogen sulphide corrosion in one condenser. The corrosion of towers, vapor lines and other equipment was relatively small. A process for controlling the sulphur content of the gasoline was worked out. The total sulphur content of sweetened gasoline can be made to vary by regulation of the method of distillation. The low limit seems to be .05 per cent and the high limit about .15 per cent on sweet, non-corrosive export gasoline.

Present Practices

Two or three times each year we make up a new treating mixture. To a saturated "doctor" solution we add some of the sodium bisulphide formed by caustic washing the gasoline. Enough "doctor" solution is used so that the solution will show a trace of free lead to assure the absence of the sulphide ion. The mixture is then ready for use. The strength of the caustic solution carrying the lead sulphide is usually about 20 degree Baume, sometimes as high as 25 degrees Baume and as low as 10 degrees Baume. Best results are obtained when about 20 degrees Baume solution is used. The process of treating is as follows:

The gasoline is introduced at the rate of 125 bbls. per hour and caustic soda solution is introduced at a rate sufficient to keep the spent solution showing only a small amount of sodium sulphide and no sodium hydroxide. Less caustic soda is required when the rate of introduction is controlled so that the solution is almost entirely sodium bisulphide.

The gasoline and caustic solution pass through the first two mixing chambers and into the settling tank where the sodium bisulphide solution is drawn off. The gasoline passing over the top of the settling tank goes into the third mixing cylinder where about 50 per cent by volume of the mixture of lead sulphide and caustic soda solution is introduced. Eight cubic feet of air per minute is introduced into the third chamber. After traveling the length of the third and fourth mixing chambers, the mixture is discharged into the agitator a few inches above the cone.

The treating mixture settles and is returned by gravity to the solution box, from which it is recirculated. By recirculating in this manner, we are able to maintain the 50-50 mixture of gasoline and treating mixture with only 25 bbls. of treating mixture. However, we usually keep our total volume of precipitated lead sulphide and caustic soda solution up to about 45 bbls. When it is necessary to add litharge or sulphur, they are added to the mixture in the solution box. Litharge is added when a portion of the solution carrying the lead sulphide will give a precipitate upon the addition of doctor solution. Sometimes the precipitate is black, showing the presence of sodium sulphide which has been carried over from the settling tank or indicating that the gasoline has not been scrubbed enough. When sodium sulphide is present, no sweetening can be done. Sometimes the precipitate will be yellow or orange, showing the presence of sulphur compounds which have been removed from the gasoline by the caustic soda solution.

When the caustic soda solution shows the presence of such compounds sweetening is accomplished at a much slower rate and litharge must be added to correct the caustic solution. Sulphur is usually added whenever litharge is added, in order to convert any lead mercaptide to lead sulphide as soon as it is formed. Sulphur is also added whenever the treating mixture is not settling properly. Approximately 4 bbls. of caustic soda per year are added to the solution carrying the lead sulphide. After the agitator is "up," it is allowed to settle 30 minutes, the treating mixture is drawn off and the gasoline washed, settled, and dropped.

Numerous experiments have been made, both on the treater and in the laboratory. Some of them will be described in detail later. At the present time it seems that we have reached our limit with the equipment now employed, so far as any saving is concerned. To reduce the amount of litharge used means to increase the time required for treating, resulting in an increased labor and power cost. Due to the limitations of our present treating equipment we now use approximately 25 pounds of sulphur and 100 pounds of litharge per 1,000 bbls. of gasoline treated. The amount of caustic soda used for preliminary washing varies from 150 to 400 pounds per 1,000 bbls. of gasoline treated. The lead sulphide method of treating has reduced our treating costs more than 95 per cent over the method of "doctor" treating in the open agitator by the batch system.

Experimental Work

Experiments were conducted on the continuous treater to determine the amounts of litharge, sulphur, and oxygen required to sweeten gasoline. Qualitative tests were made on the solution carrying the lead sulphide and it was found to contain no free lead or sulphide ion. No litharge or sulphur was added for five days, during which time 4,590 bbls. of gasoline was treated at an average rate of 75 bbls. per hour. Each of the five batches "dropped" passed every export specification. At the end of the five days the lead sulphide settled very slowly from the gasoline, indicating that sulphur was needed to bring it down and the solution gave a reddish brown precipitate with sodium plumbite solution, indicating that litharge was needed to correct the solution. The rate of treating was decreased from 125 to 75 bbls. per hour in order to prevent carrying over of sodium bisulphide solution from the settling tank.

Experiments were then made to determine the amount of air required. The supply of air was gradually reduced to a quantity slightly less than 5 cubic feet per minute and the supply of gasoline charged was maintained as near 125 bbls. per hour as was possible. At this point, a sample from a bleed on the discharge line into the agitator gave a positive "doctor" test. Without the introduction of air and until the quantity of air introduced was increased to 5 cubic feet per minute, the treater stream remained sour. When 5 or more cubic feet per minute was introduced the treater stream remained sweet. Since the compressor in use will supply 8 cubic feet of air per minute at 200 r.p.m., we do not attempt to limit the supply of air to less than that amouunt.

Laboratory Investigation

Numerous experiments have been made on a laboratory scale. Samples from refineries all over the country have been treated. Most of the samples required a mixture of lead sulphide, sodium hydroxide, and oxygen for sweetening. Few samples actually required sulphur for sweetening. A few of the semisweet gasolines could be sweetened with lead sulphide in water suspension. (Example-Sample from a Wichita Falls refinery operating on Electra and Archer County crude.

Experiments were made to determine whether the treatment with lead sulphide and oxygen resulted in any decrease in the percentage of sulphur in the gasoline. A sample of gasoline was washed with an excess of 20 degrees Baume sodium hydroxide solution and the sulphur content was found to be .078 per cent. Two portions of this gasoline were then treated with a mixture of lead sulphide and sodium hydroxide by shaking in a separatory funnel. The sulphur content of each sample was then determined and found to be .076 per cent and .072 per cent respectively. Since no material

(Continued on Page 254)

LEAD SULPHIDE TREATING IN REFINING

During the past year a great deal of attention has been given to methods of reclaiming lead sulphide, the end product of "doctor" treating. The process of adding sludge sulphuric acid to the lead sulphide and dissolving the lead sulphate formed in caustic soda has received some attention, but the method which has received the most attention is that of blowing the lead sulphide with air at elevated temperatures. This oxidizes the lead sulphide to lead sulphate which dissolves in caustic soda to form sodium plumbite.

This method of reclaiming lead sulphide results in a considerable loss of the product being treated, due to the fact that substantial quantities of the product are entrained with the lead sulphide and unless some method of separating the sludge from the gasoline is devised, the evaporation loss will be high. Also, due to the fact that the sodium plumbite formed by this process is formed only at the expense of caustic soda, and the cost of heating and blowing with air is considerable, it is claimed that the system outlined in this article will result in considerable saving over either of the above mentioned methods.

Stock Units

G-R Bentube Sections

are standard and interchangeable, and sections may be carried in stock for immediate application to any cooling service or promptly obtained in any quantity from our warehouses.

Built for low or high pressure, atmospheric or submerged service, and kept in stock for quick shipment.

The Griscom-Russell Co.
285 Madison Ave.
New York

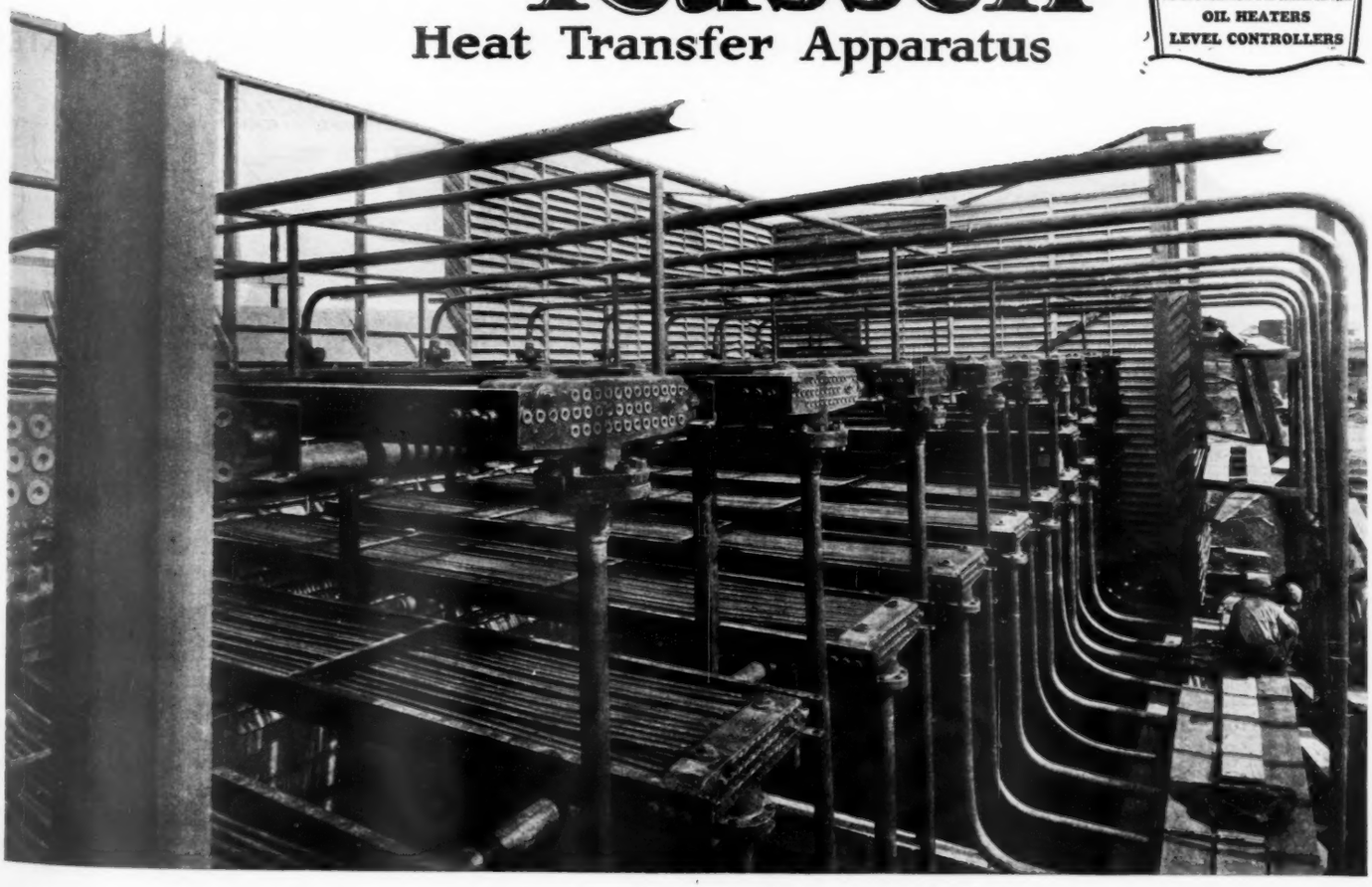
Philadelphia	Kansas City
Boston	St. Louis
Rochester	New Orleans
Pittsburgh	Houston
Columbus	Dallas
Indianapolis	Atlanta
Chicago	San Francisco
Cleveland	Los Angeles
Detroit	Seattle
Milwaukee	Denver
Minneapolis	Tulsa

For Canada: Riley Engineering Supply Co., Ltd., Toronto

Griscom-Russell

Heat Transfer Apparatus

HEAT EXCHANGERS
CONDENSERS
Sub-cooling—Partial—Reflux
Shell-and-Tube, Atmospheric, and Condenser Box Types
COOLERS
Liquid—Gas—Jacket Water
Shell-and-Tube, Atmospheric, and Condenser Box Types
OIL HEATERS
LEVEL CONTROLLERS



Of Interest to Sales Departments

AIRPLANE FACTORIES WORKING TO CAPACITY

The prediction of a rapid increase in the consumption of gasoline and lubricating oils, by airplanes, over the next few years is partly justified by the statements of many of the large airplane manufacturers in a review of their proposed winter activities practically all say their present facilities will be worked to capacity throughout the winter and some expect to expand their factories to take care of the contracts already closed.

In addition to the activities cited in the manufacturing branch of that industry the world wide expansion of air travel can be seen in several well-developed plans already to be carried out. The use of airplanes for short trips is well past the development stage in Europe and now European companies contemplate the establishment of regular routes to America.

The French Chamber of Deputies is reported to have recently authorized the appropriation of $4,800,000 for 1928 as a subvention to the Latercoere Co. of France for the establishment of an air line between France and Argentine. The Argentine government has awarded the mail contract to this company and the Chilean government has made a like contract except there will be no mail service establ'shed direct with Chile, the mail being carried to and from Argentine by rail, as a combination rail and air mail service.

Another great project under way for the extension of aviation is the forming of a company to carry mail and passengers between the United States and the West Indies, Central America and South America. This company is known as the Atlantic, Gulf and Caribbean Co. and its plans are to extend lines to other points as air travel is needed.

FUEL TANKER RATES ON PRINCIPAL ROUTES

NEW YORK, Dec. 23.—The following table shows present revised oil tanker rates for fuel oil in principal export routes: (Shillings per ton:)

Route	Rate
North of Hatters to U. K. Cont.	13s 6d
Gulf to U. K. Cont.	16s
Curacao to U. K. Cont.	14s 6d
California to U. K. Cont.	25s 6d
Abadan (Persia) to U. K. Cont.	27s
Batoum (Russia) to U. K. Cont.	12s 6d
Constanza (Rumania) to U. K. Cont.	12s 6d

The foregoing rates, based on recent business, are to ports in the United Kingdom, or northern Europe.

Rates are subject to constant revision and may vary from 6d to 1s in current transactions.

RUSSIA TO SUPPLY SPAIN?

NEW YORK, Dec. 23—Latest reports from Spain indicate that the Russian Soviet Oil Trust will get the largest share of the business of supplying the Spanish oil monopoly with gasoline, kerosene and fuel oil. Just what percentage is not yet known. Negotiations are said to be pratcically concluded whereby an American interest will supply the lubricating oils. The banking group which was awarded the monopoly will get a commission on sales of all products.

AVIATION HAZARDS

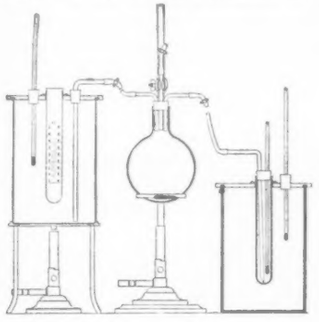
The Standard Oil Co. of California is co-operating with aviators in south California in a program of safety, by locating the hazards on their property and have particularly warned aviators of the 125 feet steel rods scattered over the oil fields and tank farms serving as a protection against lightning.

Short Talks on Specifications

By W. T. Ziegenhain

EMULSION TEST FOR LUBRICATING OILS

The steam emulsion test was designed principally to test the emulsion forming properties of turbine oil but it may be used on any lubricating oil. It is important where the oil is to be used in contact with water. An oil that will form a permanent emulsion is wasteful and is not a dependable lubricant. This is particularly true in the case of turbine lubrication where a large volume of the oil is circulated at a rapid rate, the oil coming in direct contact with water and steam. If an emulsion is present in the oil the circulation of it



will not be uniform throughout the system.

Turbine oil is usually comparatively light, having a viscosity of less than 200 and in most cases around 150 at 100 degrees Fahrenheit. This is necessary in order to allow for its rapid circulation and for use in getting into the bearing while afforded a minimum of clearance. If the oil fails to reach these bearings it is a matter of only a few seconds before they are scored and serious additional damage may result because of the terrific speed at which the blades revolve. Even where this danger is reduced to a minimum the emulsion test is important, for an oil having the property of forming a permanent emulsion, is wasteful. It must be replaced often and the cost of lubrication will run high.

The emulsion forming tendency of an oil is pretty well a function of the amount and care given during its refinement. If the chemical treatment is carried out properly and then followed with a well controlled filtering operation, the emulsion properties of the oil may be guaranteed. It is true, however, two similar turbine oils each passing a good emulsion test will produce a bad emulsion when mixed. For this reason a salesman should advise the use of one kind of oil and supply it from the same refining source at all times. When possible he should also advise refilling the entire lubricating system in preference to adding small amounts of the oil. On large installations, where purifiers are used and the volume of oil great this practice might be found impracticable.

Laboratory Procedure

The laboratory procedure followed in making the emulsion test is as near a duplication of what happens to the oil in actual use as possible. Exacting details must be followed out in the laboratory which would be of little interest to enumerate here but in brief, include the use of the apparatus as shown in the accompanying chart. The flask sitting above the bunsen burner supplies the steam for heating the water bath and is also to agitate the oil sample. Twenty cubic centimeters of the oil to be tested is measured into the large test tube and placed in the emulsifying bath which is at a temperature of 67 degrees to 78 degrees Fahrenheit when the tube is placed in it. The temperature is not controlled thereafter.

The steam pipe is then inserted in the tube extending to the bottom of the oil. Steam is admitted at a rate so as to maintain a temperature in the oil of 190 degrees to 195 degrees Fahrenheit. Steaming is continued until 40 cubic centimeters of oil and water collect in the test tube. Then the tube is transferred to the other water bath which has been heated to 200 degrees Fahrenheit and the time recorded.

This temperature is maintained while the oil and water separate out. When 20 cubic centimeters of oil separate out the time is again recorded. The time it took this amount of oil to separate out from the time the tube was introduced into the separating bath is taken as the result. This is expressed in seconds and in any case where the required volume of oil does not separate out in 20 minutes, the result is given as 1,200 plus.

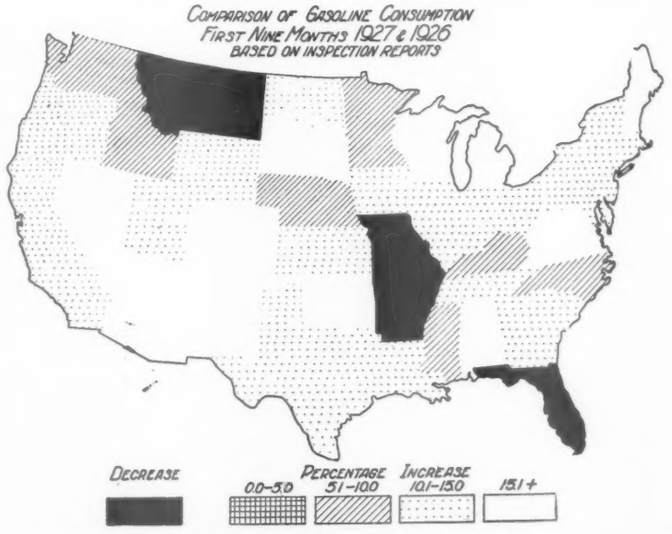
ROAD OILS BEING USED FOR DURABLE SURFACE

Attention is being called to the increased possibilities in the use of high asphalt content road oils in making a durable, cheap surface when used with crushed rock and wood chips. Experiments being carried on in the Pacific Coast states show these roads to require but little maintenance and the original cost may be as little as $4,000 per mile, depending upon the bearing strength of the original road bed. Heretofore, road oil has been used primarily to settle the dust and has found no market during the winter months. Roads made using this combination of materials have given excellent results in those places subject to heavy snows which made the roads impassable when the spring thaws came. Additional research work is being done on this problem.

OPENS LARGE STATION

SHREVEPORT, La., Dec. 23.—Louisiana Oil Refining Corp. has opened one of its largest and its most ornate filling station, No. 33 at Market and Travis streets on the main north and south highways through Shreveport. The station, built in two units of white glazed brick and tile, has seven gasoline pumps; three McConnell air lifts for washing and greasing, airmeters, automatic temperature control of water used in washing cars, etc. The plant represents an expenditure of $15,000 and is the corporation's first in the downtown business district.

INCREASE IN GASOLINE DEMAND VARIES WIDELY IN UNITED STATES



The percentage increase in gasoline consumption this year over last is not uniform in any part of the United States based on a report compiled by the statistical department of the Western Petroleum Refiners Association. From the monthly gasoline tax reports of the American Petroleum Institute covering 36 states the refiners association worked out the accompanying map showing the percentage increase in gasoline consumption. The map is based on the gasoline consumption for the first nine months of this year compared to the same period in 1926.

It will be noted that the states with varying increases in gasoline consumption are scattered. Considered by districts, the reports show that the increase in gasoline consumption in the northeastern states was 13.1 per cent; southeastern states, 7.3 per cent; Indiana territory, including Nebraska (Middle West), 12.9 per cent; Mid-Continent states, 12.4 per cent; western states, 12.5 per cent.

Florida, with a decrease of 12.1 per cent, is the only state showing a large reduction in gasoline consumption. Other

(Continued on Page 276)

A MODERN FABRICATING PLANT, MAINTAINING LARGE STOCKS OF STEEL, MANNED BY SKILLED WORKMEN,

LOCATED NEAR THE OIL FIELDS,
WITH THREE RAILROADS AVAILABLE FOR SHIPPING

MAKES "UNITED"

THE IDEAL SOURCE FOR SATISFACTORILY MANUFACTURED AND PROMPTLY SHIPPED

STEEL TANKS

ALL SIZES UP TO 80,000 BBLS.

STANDARD SIZES SHIPPED FROM STOCK!

"United" solicits inquiries, orders and correspondence on all types and sizes of steel tanks with capacities up to and including 80,000 barrels. "United" has been building steel tanks for over a quarter of a century—and this bespeaks the satisfaction with which "United" tanks have been and are received.

WIRE—WRITE—PHONE

UNITED IRON WORKS, Inc.

TULSA, OKLA. 114 N. Rosedale — KANSAS CITY — DALLAS, TEX. Magnolia Bldg.

The Simplest Vacuum Control—

Davis Casing Head Gas Regulators

THIS Davis Casing Head Gas Regulator is one of half a dozen on the same line, each controlling an individual well and automatically maintaining the well vacuum required. This kind of an installation is standard practice in all the large fields. Practically every natural gasoline manufacturer uses Davis Regulators.

With this valve an extremely accurate regulation can be secured by a simple installation, taking an equalized control vacuum from the line a short distance from the valve.

The diaphragm size is standard for all regulators from 2 inch to 8 inch sizes, and with the interchangeable diaphragm chambers this feature greatly simplifies repairs or maintenance attention. Accurate, consistent service in the most exposed locations is assured by the weatherproof construction.

Get the full description of the Davis exclusive features of design and you will see why the great majority of users say, *"They can't be beat!"*

In addition to the *Casing Head Regulator*, there is also the *Davis Supersensitive Relief Valve*, as well as *Float Box*, and *Low Pressure Gas Regulator*.

G. M. DAVIS REGULATOR COMPANY
409 Milwaukee Avenue,
Chicago, Illinois

WESTCOTT & GREIS, Inc.
Sales Engineers
TULSA LOS ANGELES DALLAS

Valve Makers for Over Fifty Years

DAVIS VALVE SPECIALTIES

O&GJ 12-29 Gray

TREATING OF LEAD SULPHIDE IN REFINING

(Continued from Page 250)

reduction in the sulphur content was made and since sulphur compounds are removed to some extent by sodium hydroxide, we concluded that the action was one of oxidation.

Another portion of the gasoline used in the previous experiment was treated with an excess of standard sodium plumbite solution and the excess lead titrated with standard molybdate solution. The amount of litharge required for sweetening was .495 pounds per barrel. This amount corresponds to .055 per cent of mercaptan sulphur. Lead sulphide for the experiment was prepared by adding an excess of sodium sulphide solution to a solution of sodium plumbite. The precipitate was washed repeatedly by decantation until the solution gave no test for sulphide ion. Strong sodium hydroxide was added until the solution carrying the lead sulphide was brought up to 15 degrees Baume. The solution was tested for free lead, sulphide ion, and sulphate ion. In every case the test was negative. The supernatant liquid was then poured off uuntil the resulting mixture consisted of approximately 50 per cent by volume of lead sulphide precipitate and 50 per cent by volume of sodium hydoxide solution.

A sample of 250 cc. of the caustic washed gasoline was treated by shaking in a separatory funnel with 25 cc. of the treating mixture described above. At intervals of two minutes, portions of the gasoline were filtered off and the color noted. No discoloration due to the formation of lead mercaptide was observed. At the end of eight minutes, a pinch of flowers of sulphur was added and the mixture shaken for two minutes. After settling 10 minutes, the gasoline was tested and found to be sweet. The gasoline was poured off and a portion of the sodium hydroxide solution was tested for free lead and for sulphate ion. The test was negative in both cases.

Another 250 cc. portion of the gasoline was added to the treating mixture in the separatory funnel and the mixture was blown for five minutes with oxygen. The gasoline was sweet and the sodium hydroxide solution gave no test for free lead nor for sulphate ion. When a mixture of sodium hydroxide and lead sulphide was blown for eight minutes with oxygen at the same rate and at the same temperature, the solution gave a distinct test for free lead and for sulphate ion.

Sodium Sulphide

As has been stated above, we try to keep sodium sulphide out of the solution carrying the lead sulphide in the treating system. The harmful effect of sodium sulphide has been demonstrated in the laboratory in the following manner.

A sample of gasoline was washed with sodium hydroxide and 250 cc. of it taken in each of two separatory funnels. To one portion 25 cc. of a mixture of lead sulphide and caustic soda prepared in the same manner as that described above was added. The same amount of treating mixture was added to the second portion, but in addition, 1 cc. of the 10 per cent solution of sodium sulphide was added. A pinch of flowers of sulphur was then added to each portion. The first sample was sweet after shaking 10 minutes. The second sample was not sweet after shaking one hour.

Although we have done very little quantative work to determine the specific action of lead sulphide as a sweetening agent, it is natural that we should form some conclusions concerning the reaction after being intimately associated with the process for so long. Many theories have been advanced concerning the function of lead sulphide in the sweetening of petroleum distillates. Wendt and Diggs* assigned to lead sulphide a catalytic action, offering the following explanation; "lead sulphide is preferentially wetted by oil rather than the aqueous solution and tends to absorb sulphur compounds, especially mercaptans, on its surface and to enable them thus to react more readily with the constituents of the sodium plumbite solution." This explanation is good as far as it goes and is probably true when lead sulphide is used in connection with sodium plumbite solution for sweetening, but it is obvious that when no sodium plumbite is present in the treating solution, this explanation would have to be disregarded.

Morrel and Farragher advance the theory, based on extensive research, that the lead sulphide is oxidized to lead sulphate which dissolves in the caustic soda present to form sodium plumbite and sodium sulphate. They give the following for the reaction:

$PbS + 2O_2 = PbSO_4$

$PbSO_4 + 4NaOH = Na_2PbO_2 + Na_2SO_4 + 2H_2O$

It is a well known fact that sodium plumbite is formed when lead sulphide and sodium hydroxide are blown with air or oxygen. Elevated temperatures facilitate the formation of the sodium plumbite. However, by this process, sodium plumbite is formed only at the expense of sodium hydroxide and the formation of one mol of sodium sulphate for each mol of sodium plumbite formed.

The results we obtain with our treating system do not indicate that the above reactions take place. In the first place, the treating is done at ordinary temperatures and the time element is less than one-half minute. Secondly, only 8 cubic feet of air per minute is introduced, and this amouunt is not sufficient to convert enough lead sulphide to plumbite, even with 100 per cent efficiency. Third, the amount of caustic soda we have to add to the solution carrying the lead sulphide does not exceed 4 bbls. (2,800 pounds) per year. Fourth, the amount of sulphur we use is slightly less than one-third of the amount required for doctor treating. A series of determinations of the amouunt of litharge required for "doctor" treating indicates that the amount required will average .536 pounds per barrel. This corresponds to .06 per cent of mercaptan sulphur. As has been stated above, we use 100 pounds of litharge per 1,000 bbls. of gasoline treated.

Assuming that this entire amount was consumed in "doctor" treating, it would be necessary to form enough sodium plumbite to correspond to 436 pounds of litharge for treating 1,000 barrels of gasoline in eight and one-half hours. The amount of oxygen required to do this with 100 per cent efficiency is 125.1 pounds. The amount actually introduced is approximately 71.4 pounds. The amount of pure sodium hydroxide that would be required each day would be 156.4 pounds. The amount actually used, taking into consideration the amount required for making up the initial treating mixtures and the amount added occasionally to keep the solution up to strength, does not exceed an average of 12 pounds of commercial caustic soda per day.

A series of analyses made on the solution carrying the lead sulphide show that the solution contains sulphites and thiosulphates as well as sulphates. These analyses show that the amount of sodium sulphate present in the solution increases, but at a very slow rate. These facts have led us to conclude that lead sulphide suspended in analkaline solution acts catalytically to enable the oxygen introduced to combine with the hydrogen atoms of the mercaptans and form water, leaving the disulphides which give a negative "doctor" test. This reaction calls for the formation of approximately 4.5 gallons of water per day, which is not an excessive amount.

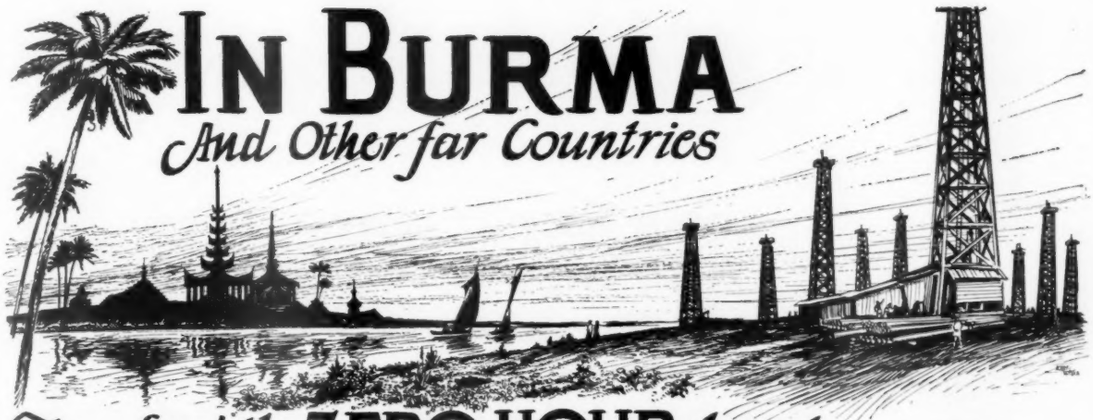
Conclusion

We have concluded that:

1. The action of lead sulphide is in the most part catalytic although a small amount is converted to plumbite by the air introduced.
2. It is necessary to introduce air in quantities sufficient to contain enough oxygen to completely react with the hydrogen atoms of the mercaptans present.
3. The catalytic action is destroyed by the presence of small amounts of sodium sulphide.
4. Sulphur assists in the sweetening but is not required.

*J. Ind. and Eng. Chem., 1114 (1924).

IN BURMA
And Other far Countries



They find the ZERO HOUR *bomb* SAFE *and* SIMPLE *to operate.*

WHEN a detonator for oil well shots can be transported to the far side of the world—received by men to whom it is totally strange—and operated successfully with no instructions except the printed directions which accompany it—that detonating device must be correct in design and construction—it must combine remarkable SAFETY, SIMPLICITY and DEPENDABILITY.

In October, 1925, a number of Zero Hour Electric Bombs were ordered shipped to Rangoon, Burma, by a British exporting house, for use in the Yenangyaung field. In October, 1927, the same customer placed a second order for *twice as many* to be shipped to the same place.

The Zero Hour Electric Bomb is easy to operate according to simple printed directions. It is SAFE, both for the shooter and well, because it cannot explode before the time for which it is set to explode. It SAVES TIME and ELIMINATES UNCERTAINTY because it can be depended upon to put off the shot, functioning under any conditions of heat, pressure, magnetic influence, or when buried with the shot under cavings.

Realizing that protection of costly wells is true economy, many major operators in the United States specify a Zero Hour Bomb for EVERY shot in EVERY well. And now operating companies in foreign lands are turning to the Zero Hour Electric Bomb for putting off oil well shots safely and certainly. An order for export shipment of Zero Hour Electric Bombs to Buenos Aires, Argentina, South America, has recently been filled for one of the largest companies operating there.

The Zero Hour Electric Bomb can be secured through all principal torpedo companies. Standard Type has a setting range of 1 to 11 hours; Special 22-Hour Type has a setting range of 12 to 22 hours. Both types are furnished with either 3¼" O.D. cast iron shell, or with 2½" O.D. seamless tubing steel shell with cast iron cap.

ZERO HOUR TORPEDO COMPANY

408 Cosden Bldg., Tulsa, Okla.

Day Phone 2-9612; Night Phones 3-1775, 3-7650, 2-6097

BORGER, TEXAS
Howard Culp
Phone 254, P. O. Box 411

SEMINOLE, OKLA.
George Pascoe
Phone 410, 518 Second St.

Zero Hour
Electric Bomb

DEPENDABILITY

Long Experience, carefully inspected Special Alloy Steel, skilled workmen, modern machinery and methods are combined to assure in SPANG WELDLESS JARS, the dependable quality which gives you that feeling of ease and satisfaction when the tools are equipped with Spang Jars.

Are you using SPANG WELDLESS JARS, the most dependable Jars made today?

Spang and Company
BUTLER, PENNA.

Sold By All Leading Supply Houses

Patented Oct. 6, 1925—Other Patents Pending

DEWATERING OF GAS WELLS; SERIOUS PROBLEM IN PRODUCTION

By Morgan Walker*
Associate Petroleum Engineer, United States Bureau of Mines

One of the most serious problems in the production of natural gas is the removal of water from the wells. As a gas well approaches its period of exhaustion, the removal of water by properly designed devices become increasingly important. Several methods are used for dewatering gas wells. If the gas velocity and pressure are high enough, the water in the well will be carried out by the gas on opening the well to atmospheric pressure and allowing the gas to flow unrestricted except for the resistance of the casing. This method of dewatering a gas well is detrimental to the producing sand, and very wasteful if used frequently.

When the well has declined in production a string of tubing is often run in the well, with a packer set at the top or bottom of the well. If the top of the tubing is opened to atmospheric pressure and the gas is allowed to flow unrestricted as in the above method, the water can be discharged at the top of the well, provided the velocity of the gas is high enough. However, if the water has accumulated in the well until the water pressure is equal to or greater than the gas pressure, the water cannot be brought to the surface. In dewatering a gas well by this method the operator sometimes finds that if the packer is set near the top of the well and the casing is tight, the water can be blown out when it is impossible to blow it out with the packer set at the top of the sand. This is largely due to some gas leaking into the tubing through the collars. This method of dewatering gas wells is also wasteful.

Use of Siphon

Water can be pumped out of a gas well with virtually the same equipment as used for pumping oil, but the method involves installing a separate pump for each well, and difficulties are encountered in attempting to pump water under high gas pressure.

A siphon affords a means of keeping the water out of a well without wasting the gas and with small operating cost. The water is raised by expanding some of the gas from the sand into the water. The method is adaptable to a number of conditions and lends itself well to the problem. There have been few data published on siphons until recently, but there has been much information published on pumping water by compressed air. These data have been obtained on comparatively shallow wells and are not directly applicable to siphon design.

Gas is allowed to enter the siphon below the level of the water. The gas expands, due to the pressure being lower inside the siphon because the top is open to atmospheric pressure, and the gas in expanding displaces some water in the siphon line. The density of the mixture in the siphon line decreases and the water level in the siphon rises until finally water rises to the top of the well. The water is supplied through the water inlets and the gas through the jet nipple. A gate or stop is placed on the line at the well head if the siphon is to be operated intermittently.

If the well is making only a small amount of water, the siphon may be blown periodically. If the well is making water in sufficient quantities to drown it in a short time, a siphon can be operated continuously. By using an automatic drip the gas used to raise the water can be delivered to the gathering line and the water discharged to the collecting pond.

Depth of Water

To determine whether or not a siphon will deliver water from a required depth by utilizing the gas pressure and volume produced by the well, it is desirable in the systematic planning of a rejuvenation project and intelligent interpretation of results obtained to have data on the previous performance of the well, but it is not absolutely essential to the initial siphon installation. This information can be obtained by referring to the records kept of the initial rock pressure and decline of rock pressure, potential capacity or open flow, the daily delivery and total delivery, and the well logs.

A bailer can be used to determine the depth of water in the well. A method using an electric circuit, may also be used. The latter gives more accurate results and is easier to apply.

The well should be shut in and all leaks stopped. If a pressure gauge is then screwed into a suitable connection at the well head, the final pressure that the well will build up can be obtained. It may require an hour to get the pressure and it may require as much as 24 hours. If the well can be bailed to bottom, the rate of build-up under different pressures can be obtained easily by observing the rate at which the hole fills up and plotting a curve with height in feet as ordinates and time in minutes as abscissae, since the volume is a function of the height. The method of plotting the curve is later explained under the rate at which water enters the well. The tangent to the curve at any point will be the rate at which water enters the well at that pressure.

The depth of well should be taken with a steel measuring line. When the siphon line is opened to atmospheric pressure, the gas pressure will cause the water to rise in the siphon line to a lefinite level. The distance from this level to the top of the siphon line is the lift, or the height, the water is to be lifted by the expanding gas.

Submergence

The submergence, or the distance from the jet level to the top of the water column in the siphon line due to the gas pressure outside the siphon, expressed in feet as applied to the siphon in this paper, is approximately equal to the ratio of gauge pressure P divided by average weight of oil field brines per foot 0.477, minus the height the jets are placed above the water level. Or, submergence

$$\text{in feet is } h = \frac{P}{0.477} - \text{distance from water}$$

level outside the siphon line to the jet level.

In case the siphon is to deliver water and gas continuously the amount of gas available is of importance since the amount of water that can be delivered depends on the amount of gas that can be expanded. The volume delivered depends on the pressure at which the volume is taken.

The size of line to use depends on the rate of water delivery to the well. The rate of water delivery through a siphon line from a given depth and with a given gas-water ratio is proportional to the areas of the siphon lines, if a workable submergence is maintained. Table 1 shows data on typical installations, obtained from actual field tests.

Theoretically, the sizes of the jets

Table 1—Typical Siphons

No.	Total depth of well, feet.	Depth of water when siphon was installed*, feet.	Submergence, feet.	Submergence, per cent.	Gas-water ratio.	Height of lift, feet.	Rate water delivery, gals. per hr.	Size siphon line, inches.	No. of jets.	Starting pressure pounds.	Height jets above water level, feet.	Size jets, inches.
1	1,483	125	81.3	6	714	1,353	3	¾	1	40	5	1/16
2	1,442	310	212	17.8	187	907	27.7	1	1	105	13	1/16
3	1,750	42	237	14.4	108	1,413	33.28	¾	1	165	68	1/16

*Measured from bottom of well.

*Presented by permission of the Director of the United States Bureau of Mines.

This is another of a series on specifications—keep for reference in ordering.

BARSCO PRODUCTS

for Oil and Gas Well Drilling

—here's a stronger and more rigid Gas Packing Clamp—

Here's another proof that BARSCO products are built better—*two extra strong bolts* (instead of the usual one) *at either end*—greater rigidity, therefore longer life.

Specifications on Gas Packing Clamps with Gas Outlet

Size, Inches	Size Gas Outlet	Weight, Pounds
6¼x 4½	1½ or 2	120
6⅝x 4½	1½ or 2	130
6⅝x 5 5/16	1½ or 2	120
7⅝x 5⅝	1½ or 2	150
8¼x 5 5/16	1½ or 2	160
8¼x 5 5/16	2½ or 3	155
8¼x 6¼	1½ or 2	160
8¼x 6¼	2½ or 3	180
8¼x 6⅝	1½ or 2	155
8¼x 6⅝	2½ or 3	190
9⅝x 7⅝	1½ or 2	195
9⅝x 7⅝	2½ or 3	240
10 x 6⅝	1½ or 2	230
10 x 6⅝	2½ or 3	290
10 x 8¼	1½ or 2	200
10 x 8¼	2½ or 3	250
11⅝x 9⅝	1½ or 2	245
11⅝x 9⅝	2½ or 3	320
12½x 8¼	1½ or 2	310
12½x 8¼	2½ or 3	390
12½x10	1½ or 2	250
12½x10	2½ or 3	330
13½x12½	1½ or 2	300
13½x12½	2½ or 3	380
15½x12½	1½ or 2	370
15½x12½	2½ or 3	465
15½x13½	1½ or 2	350
15½x13½	2½ or 3	440

BARSCO also builds Gas Packing Clamps —regular pattern, without gas outlets.

Stocks carried by Dealers.

BARTLESVILLE SUPPLY COMPANY of Missouri
3400 MAURY AVENUE—ST. LOUIS, MISSOURI
Texas Warehouse—J. G. Lockard, 504 Western Ave., Amarillo, Texas
Export Office: 150 Broadway, New York City
Manufacturer's Representatives

B. & A. Specialty Co., Tulsa, Okla.
Miller Tank & Supply Co., Casper, Wyo.

—Write for Complete Catalog

Donovan A. S. M. E. Code Oil Country Boiler

GOOD- TO THE SMALLEST DETAIL

The next time you see a DONOVAN, note the construction and attachment of the doors and bonnet.

The fire door is sturdily constructed and firmly attached. *Note the heavy bar iron hinges and lugs.* They fit perfectly and are made to last. Hinges and lugs are attached to the boiler with stud bolts.

Note the smokebox door attachment. The top lugs are double riveted so they cannot be loosened by the heat and cause the door to sag.

The bonnet is steel and is attached with bolts larger and stronger than usual. It can be readily removed, shaped up and replaced if damaged in handling.

DONOVANS are good to the smallest detail. We regard this as the external evidence of inherent quality.

Manufactured by

DONOVAN BOILER WORKS, INC.

PARKERSBURG, W. VA.

NEW YORK OFFICE—30 Church Street

FRICK-REID SUPPLY COMPANY

Mid-Continent Distributors

GREAT NORTHERN TOOL & SUPPLY CO

MIDLAND IRON WORKS

Montana Distributors

All Leading Supply Houses Throughout the Eastern Fields Handle

DONOVAN QUALITY PRODUCTS

NONE BETTER

should be extremely small in order that the efficiency of the siphon may be high, but the height to which the gas will lift the water does not depend on the size of the jets. If the jet holes are made small they become clogged. For practical reasons, then, the holes should be made as large as possible and still satisfy the requirements. Data were obtained to indicate the practical balance between the two above conditions. It was found that when using one jet, the diameter of the jet to the diameter of the siphon line should be as 1 is to 16. If all the gas is to be delivered to the gathering line through the siphon line, the efficiency of the siphon line is not so important and the jet size may be increased to one-eighth inch holes. If the gathering line pressure plus the static head of submergence and friction is less than one-half of the pressure available, the number of one-eighth inch holes required is given by the following formula:

$$N=\frac{Q\sqrt{GT}}{Cd^2P}$$

where N=number of 1-inch holes; Q =standard cubic feet of gas per min. (14.7 at 60 degrees Fahrenheit); C= constant, 395; d=diameter of pipe in inches; P=pressure of gas in the annular space between the casing and siphon line. This pressure includes the weight of the column of compressed gas.

Leaks Lower Efficiency

In order that all the gas used for expansion be admitted through the jets, special care should be taken to avoid collar leaks in a siphon line, as they decrease its efficiency. Since the siphon depends on the expansion of gas for its operation, there must be enough water in it to prevent the gas breaking through before sufficient expansion has taken place to lift the water. It is presupposed that there is sufficient difference in pressure between the pressure outside the siphon in the well and the discharge pressure at the top of the siphon to permit the gas to expand enough to raise the water the required height.

The ratio of the distance from the jet level to the water level in the siphon line produced by the gas pressure in the well, to the distance from the jet level to the top of the siphon should be as 1 is to 7, or about 14 per cent. Siphons can be operated with lower percentages of submergence but economical expansion cannot be accomplished much below this ratio.

The pressure necessary to start a siphon operating is the pressure necessary to overcome the liquid head above the jet, plus the friction head of the rising column. The pressure of average salt waters is about 0.477 pounds per square foot of height (sp. gr. 1.1).* The pressure necessary to start the siphon would be slightly in excess of this multiplied by the submergence in feet, plus the friction head. If the well will build up this pressure it will start the siphon.

Submergence in this discussion refers to the height that the water in the siphon raises above the jet nipple, due to the gas pressure at the water level in the casing or tubing. The submergence obtainable in a siphon depends on the gas pressure at the water level in the well. A submergence of less than 14 per cent of the depth from the siphon head to the jet for a 1-inch siphon is not advisable. As the diameter of the siphon line is increased the necessary depth of submergence increases. When the operation of a siphon is started the water level in the well is usually lowered. When the water level is lowered, the gas pressure usually increases. But if the gas pressure does not increase as fast as the effective water head drop, then the submergence will be lowered, and less pressure will be needed to operate the siphon. But if the submergence is decreased below about 14 per cent, economical expansion cannot take place, or the siphon will cease to function.

Height of Water in Siphon

The height the water stands in the siphon line above the water level outside the line is the total possible submergence, but if the gas jets were placed exactly at the water level, the gas pressure would not be sufficient to cause gas to enter the siphon line and (neglecting dissolved gas in the water) no expansion could occur. If for a given gas pressure the jets are placed too high on the siphon line, there will not be enough submergence. Seven or eight feet above the known water level has been found to be an average minimum practical distance to place the jets. It should be kept in mind that the water level outside the siphon line is not constant due to the gas breaking through as it rises from the producing sand; also there is a possibility of the siphon becoming inoperative by the water level building up over the level at which the jets are set.

The rate at which water enters the well depends to some extent on the working pressure of the well. This rate can be found by plotting a curve, using time for abscissae and height of the rising column of water for ordinates. A measure of the tangent to this curve at any point will be the rate at which water enters the well at the pressure shown at the point of tangency. Design the siphon to lift the water at the rate that permits the maximum amount of gas and the minimum of water to enter the well. From this curve one is able to determine the amount of gas available at any pressure and the rate of water delivery to the well at that pressure.

$$\frac{V_1}{Q}=\frac{h+h_1}{77.99\ \mathrm{Log}_{10}\frac{P_2}{P_1}}$$

$h_1=\frac{s^2}{29}$—Where S=20′/sec. P_1=14.7 lb. per square inch.

Q=Vol. water. V_1=Vol. free air

An anchor of sufficient length should be placed on the siphon line to keep the water inlets above the slush and cavings in the bottom of the well. The anchor should be plugged and either a cage or two tees used.

The series of curves were derived from

$$\frac{V^1}{Q}=\frac{w\left(h+\frac{s^2}{2g}\right)}{EP_a\log_e\frac{P_2}{P_a}}$$

in which w=weight of liquid per cubic feet; h=height of lift in feet; s=velocity of efflux, feet per second (Assumed, 20 feet per second); g=32.2, acceleration of gravity in feet per second; E=efficiency assumed=100 per cent; P_2=absolute pressure at bottom of siphon; P_a=atmospheric pressure, pound absolute.

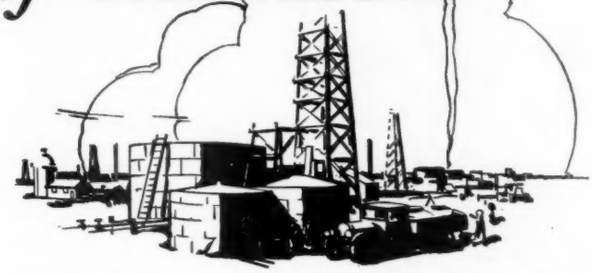
Successive substitutions were made for P_2, keeping h constant. Then P_2 was kept constant and different values of h were used.

The calculated ratios of $\frac{V_a}{Q}$—were plotted as ordinates against their corresponding P_2 values for abscissae, and characteristic curves were obtained. The curves are, of course, theoretical, since the efficiency is assumed to be 100 per cent and compressibility of the gas is neglected. A study of these curves reveals that there is little change in the ratios of $\frac{V_a}{Q}$—with great changes in pressure until the critical ratio of pressures is reached. Or, the theoretical pressure necessary to raise fluid need only be sufficient to overcome the fluid head of submergence.

In order to arrive at what resistance the rising column of water and gas may be expected to undergo and still do the maximum amount of work, it is necessary to investigate conditions which will give the maximum amount of work of isothermal expansion. The variables over which we have control are: The back pressure $P_1=P_a$, the velocity of efflux (s), and the diameter of the flow-tube. Since the velocity of efflux and the diameter of the tube are direct functions of the back

*Mills and Wells: Waters Associated With Petroleum and Natural Gas, U. S. Geol. Surv. Bull. 693.

A Coat of Arco Protection *is better than Months of* REPAIRS



RUST plays no favorites. It keeps on destroying . . . year after year . . . and spares nothing made of iron.

Yet you can conquer rust *permanently* . . . and prevent the damage it is doing to your equipment every year. No matter how severe your conditions . . . Arco already has perfected a paint or protective product to meet them successfully.

Since 1881, we have given particular attention to rust-resisting paints. The widespread use of Arco products throughout the oil and gas fields testifies to the high regard maintenance men hold for them. Tell us your problems. We will be glad to help you overcome them. *Write us today.*

THE ARCO COMPANY · CLEVELAND, OHIO
PAINTS · VARNISHES · ENAMELS · LACQUERS (81)

ARCO

PAINTS · VARNISHES · ENAMELS · LACQUERS

Figure it out for Yourself

A guaranteed Saving of 50% In Valve Check Replacements . . . A Probable Saving of 80%

How much will you save in pulling and valve replacement costs by the use of No-Co-Ro Drops and Seats? Actual figures will vary. Some users (names on request) have used No-Co-Ro Drops and Seats for 36 months in wells that once required change every month. Your saving should average 80%. We guarantee 50%. The reason for this drastic saving is evident. No-Co-Ro Drops and Seats will not corrode, wear or deteriorate in any marked degree under the most trying circumstances. They are made of a special alloy, so hard few shops will undertake to machine it. Their design insures dependable, rhythmic action, devoid of looseness or bobbing.

Figure it out for yourself. With a guaranteed saving of 50% and a probable saving of 80% can you go wrong with a trial?

NORRIS BROS., Inc.
ROBINSON, ILLINOIS

pressure P_1, to find the miximum work of isothermal expansion in terms of the ratio—Work $= P_1V_1\log\frac{P_2}{P_1}$. Differentiating this expression with respect to P_2 and equating to 0, $\frac{P_2}{P_1} = 0.367$. Thus it is seen that a flow-tube that would give this back pressure at each point throughout its length would be the correct design for obtaining the maximum work of isothermal expansion of the gas used. Such a tube would be impracticable. The next best thing to do would be to design a tube that will give the average frictional back pressure over the whole length of siphon line for any given set of conditions.

Back Pressure

Similarly it can be shown that the back pressure that should be maintained for maximum work of adiabatic expansion is $\frac{P_2}{P_1} = 0.528$. It then appears that a higher back pressure could be carried if adiabatic expansion were effected. Further investigation in this direction would be interesting. The expansion of the gas in the siphon line, as the temperature difference between the bottom and top of the siphon line increases, instead of approaching adiabatic expansion from isothermal expansion, goes in the opposite direction. That is, the exponent of PV in the equation $PV^n = c$ instead of going from 1 toward 1.4 goes from 1 to some value less than one. It is evident, then, from a thermal efficiency standpoint, that the velocity of the ascending column should be kept low enough to permit the gas to assume the temperature of the liquid being raised.

In designing siphons for deep wells, the pressure caused by the weight of the column of compressed gas is large enough to become important. This pressure can be found by the following formula[3]:

$$\text{Log}_{10}P_1 = \frac{L + 63.745\ \log_{10}P_2}{63.743}$$

in which G (P_1—P_2) = weight of column of gas; L = length of pipe in feet; G = gravity of gas, air = 1; P_1 = absolute pressure at bottom of the well, pounds per square inch; P_2 = absolute pressure at top of well in pounds per square inch. To get the pressure due to the column of gas in pounds per square inch absolute, multiply the weight due to air by the gravity of the gas and add 14.7.

With these facts in mind, the following equipment was set up in the field. One well in which the siphon was installed was drilled on June 19, 1922, and had an open flow of 6,000,000 cubic feet from a sand at 1,473 to 1,483 feet. There was no record of the initial rock pressure. The rock pressure at the time of the installation was 40 pounds gage. The 2-inch tubing had been run and a packer was set at the top of the sand. The fluid level was determined by connecting one side of an electrical circuit through a bell and a 12-volt storage battery to the top of the casing and running an electrode insulated from the casing but open at the bottom, down the hole. When the salt water was reached, the circuit was completed, and the bell rang. The rise and fall of the water level due to the gas breaking through was easily determined by lowering and raising the electrode. It was found in this case that there was 125 feet of water in the hole. A three-quarter-inch siphon line was run in and hung 2 feet off bottom with 5 (one-eighth-inch) holes drilled in three-quarter-inch by 6-inch nipple, just above the known water level.

The siphon started delivering water at the rate of 3.5 gallons of water per hour immediately. After 24 hours the tubing pressure had increased to 75 pounds. An open-flow test showed 125,000 cubic feet per day, which increased in one week to 160,000 cubic feet per day and to 195,000 cubic feet the next week. Due to the removal of the water from this well, a dead well, 300 feet away, started making gas. A siphon was placed in it and it was brought up to 200,000 cubic feet per day.

Procedure Adopted

The following procedure was adopted in another well, case 2, in Table 1. The well was drilled to 1,442 feet. The initial rock pressure and volume were not known. The rock pressure when the installation was made was 66 pounds gage. The liquid level was determined as described above and found to be 310 feet off bottom. The well had been producing through the casing and had no tubing in it. The shut-in pressure with the water in the hole was found to be 40 pounds. Since it was desired that only a small part of the gas produced by the well be delivered through the siphon line, this pressure would not operate the siphon with the jets that would give the expansion desired. Auxiliary pressure from a neighboring well was applied. A 1-inch siphon was hung 18 inches off bottom. Two one-sixteenth-inch holes were drilled into a jet-nipple and this nipple was set 13 feet above the water level. A pressure of 105 pounds gage was applied to the well and the siphon began to deliver water at the rate of 27.7 gallons per hour, and gas at the rate of 694 cubic feet per hour. This is a gas-water ratio of 187. The height to which the water was raised in the siphon line, due to a pressure of 105 pounds gage, was in this case 220 plus 5 feet, due to the weight of the column of gas. This gives a jet submergence of 225—13 feet = 212 feet, or a percentage submergence of 212 ÷ 1,119 = 17.8 per cent.

Another installation was made in a well 1,750 feet deep; 1,691 feet of 3-inch tubing was run and a packer set above the sand. The depth to which the water could rise in the hole without materially affecting delivery was determined to be 90 feet. One one-sixteenth-inch jet was drilled in a jet-nipple and was set 10 feet above the 90-foot level. A cage was run immediately above the anchor. The anchor was hung 5 feet off bottom. The siphon delivered water at the rate of 33.28 gallons per hour, and gas at the rate of 480 cubic feet per hour. This is a gas-water ratio of 108. The possible submergence of the gas jet due to the gas pressure of 155 pounds gage is 325 + 12, or 377 feet. The actual submergence is 337—100 = 237 feet, or a percentage of submergence of 237 ÷ 1,650 = 14.4 per cent.

In case No. 2, the openings in two 1-inch tees were turned 180 degrees from each other and screwed on the 7 feet of anchor. These were used as water inlets. This could be done easily, as there was no tubing through which the tees had to pass. In case No. 3, a cage was used for a water inlet. The cage is made of pipe, the same size as the siphon line, and is about 5 feet long with 30 to 40¼-inch holes drilled through it. This well can work continuously, delivering water at the rate of 33 gallons per hour, with an expenditure of 480 cubic feet per hour, delivering to atmospheric pressure.

In some old fields, failure to remove the water from a few wells has caused a large part of the field to become unproductive. The removal of water from these offending wells by properly designed siphon lines has resulted in a marked increase in the gas production of the field. It is impossible to stress too greatly the importance of using all precautions possible to ascertain the source of the water coming into the gas well. If water is coming from above or below the producing sand, the removal of the water by means of a siphon is a mistake. The water should be shut off, preferably by the proper use of cement.

The foregoing shows that a siphon may be made to operate under widely differing conditions. Construction work should be preceded by a thorough study of underground conditions and all water not coming from the producing sand should be shut off.

The use of automatic drips makes the gas used in bringing the water to the surface available for the gathering lines, if the difference between the working pressure of the well and the gathering line is high enough. If the wells are making small amounts of water, so that the water

(Continued on Page 272)

[3] E. L. Rawlins, Associate Natural Gas Engineer, United States Bureau of Mines.

The Holmes-Manley *Cracking* Process

Flexibility of Operation.

High Yield of Quality Gasoline direct from the Unit

Fractionation and Condensation under Full Operating Pressure.

High Yield of Liquid Products with a minimum yield of fixed gas and carbon.

Low yield of Residue Fuel Oil of good Quality.

Relatively low Operating Temperatures.

Ease of Control.

Long Runs and High percentage of Operating Time.

Low Labor and Fuel Costs.

Address Inquiries to

THE TEXAS COMPANY

W. S. S. RODGERS

17 Battery Place, New York, N. Y.

Branch Office

816 Palace Building, Tulsa, Okla.

BAROID

makes well-drilling safer

This remarkable material seals off gases—gives wells and human lives a protection you never thought possible!

BAROID, properly used, eliminates the danger of blow-offs, makes wells safe, protects the lives of drillers.

Poured down the well, Baroid builds a firm, erosion-resisting arch that effectively seals off the dangerous strata—those which bear trouble-making gases. Thus it prevents the eruptions which lead to disaster.

Baroid is a specially processed form of barytes—a fine white powder that will stay in suspension almost indefinitely. It is so fine that it will penetrate under pressure almost any formation encountered in drilling operations.

Furthermore, Baroid has remarkable lubricating qualities, assisting the drill bit in cutting through the hardest formations. And its sliming qualities protect the drill stem and both the inside and outside of the casing, thus preventing friction from the cuttings which emerge from the wall of the hole. Its action also prevents loss of circulation, fissures and caving.

Even on Cable Jobs!

Usually "mud-fluid" is associated only with rotary drilling operations. Yet a "Baroid fluid" was used with entire success on a *cable tool job* at Winfield, Kansas, U. S. A. It was found that the fluid was heavy enough to seal off the gases, yet not heavy enough to interfere with the dropping action of the tools.

Truly, this new material offers the most thoroughgoing protection. It has been used by a large number of drilling companies throughout the Mid-Continent, Colorado and Wyoming fields in the U. S. A.—and *we have yet to hear of a single complaint or disappointment!*

Baroid is absolutely inert, non-electrolytic, non-electrostatic and non-poisonous. Its specific gravity is high—4.28.

We shall be glad to send you prices and further information.

NATIONAL PIGMENTS AND CHEMICAL COMPANY
SAINT LOUIS, MISSOURI, U. S. A.

STORY OF THE FIRST GAS WELL RECALLED BY HAND-WROUGHT TOOLS

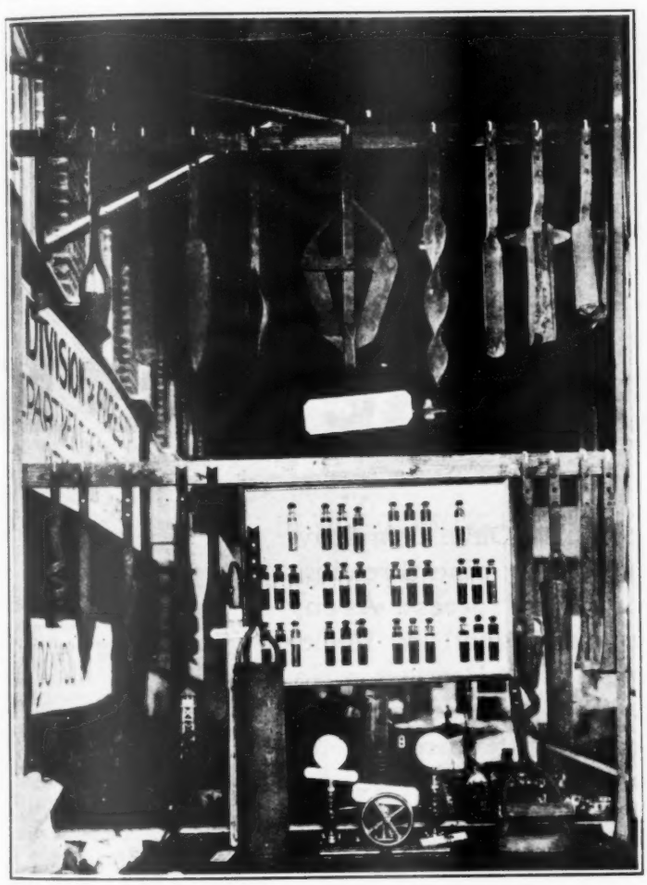
By D. H. Bancroft
Staff Correspondent

SHREVEPORT, La., Dec. 24.—Colonel Drake laid the foundation of an industry without which the wheels of civilization would not now be turning quite so smoothly, but in Natchitoches Parish, Louisiana, there was drilled a gas well antedating his experiments by several years. True, those who drilled it didn't know what they had and it was not utilized commercially. Nevertheless, it produced gas.

The tools, hand-wrought by negro slave labor, from bar iron hauled overland from New Orleans to Fort Jessup, then the nearest frontier trading post, were exhibited at the 1927 Louisiana State Fair by the State Department of Conservation. Also the log of the earliest gas well is hidden somewhere in a mass of papers, books and other personal possessions of Emanuel Prudhomme, inherited by his daughter-in-law, Mrs. Jane Prudhomme. Mrs. Prudhomme divides her time between Natchitoches, the seat of the parish (county) of that name and a plantation near the one on which the well was drilled.

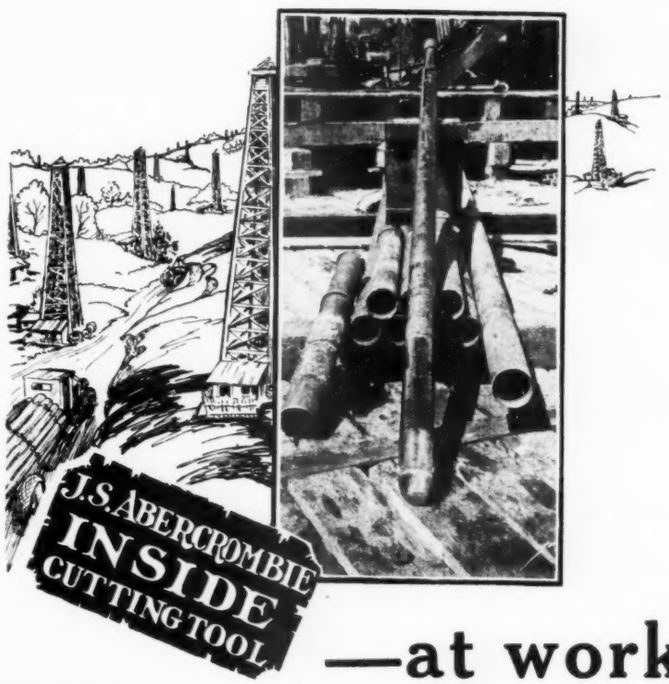
Old Manuel Prudhomme, so called to distinguished him from Emanuel Prudhomme, who at the age of 83, resides across Cane River Lake from the original homestead, was almost a fanatic on the subject of pure water for domestic consumption—and for the stock on his wide spreading plantation of many thousand acres inherited from his father.

"Oakland" plantation has been in the Prudhomme family for five generations, the family managing to hold onto it through the vicissitudes of reconstruction after the Civil War, though somewhat reduced in extent. It was originally on the left bank of Red River, but the Red is a vagrant stream and on one of its migrations cut an entirely new channel several miles east of the old one, and Cane River Lake, extending for miles through Natchitoches Parish, is the result. And "Oakland" now, instead of being on Red River, is on Cane River Lake, 10 miles south of the town of



Fancy drilling a 4,000-foot hole with the above tools! However, they did make two 400 to 600-foot tests about 100 years ago on the Manuel Prudhomme plantation at what is now Bermuda, Natchitoches Parish, La. They were hand-hammered out of bar iron by a negro slave blacksmith and were bolted to iron rods 1¼ to 2½ inches square which were used for a drill stem. A section of this stem is shown at the extreme right. To it is bolted what appears to have been a reamer about 10 inches in diameter and 2½ feet long, the cutting edge being at both the bottom and the full length of the tool from top to bottom.

From left to right in the upper row the tools are: An augur bit for soft formations. A hollow cone bit with cutting edge in a spiral up the outside. The next three are spoon-shaped affairs, the particular use for which is anybody's guess. Expert opinion has classified the tool in the center as a reamer. Next are another form of augur bit, another spoon and two designs of what appear to have been reamers. The one on the end is about five inches in diameter and has a cutting edge at the bottom as well as on the side. The bottom row from left to right shows another auger bit, a smaller hollow cone, possibly the ancestor of the modern core barrel; a cross between a corkscrew bit and the cone bit in the upper row; a double-pointed corkscrew bit, another spoon and another bailer. This bailer has a ball valve at the bottom seating on a gridiron arrangement. The reason for such design is not apparent to modern drillers. It is about eight inches in diameter and three feet high. On the opposite side of the gauge tester is shown a square reamer, used for squaring the hole to admit casing it with cypress planks. Just above this tool is another combination corkscrew-cone bit and next to this is a smaller bailer, three inches by three feet, having a hinged valve at the bottom. Next to this is another tool the use of which hasn't been figured out. It is about three inches in diameter with two iron bars bisecting each other at right angles welded to the ring, both ring and cross bars having chisel edges. Next to this queer tool is a three-inch bit very much like the present-day cable tool bit. The collection formed a part of the exhibit of the minerals division of the Louisiana Conservation Department at the State Fair at Shreveport, under W. F. Chisholm, supervisor.



—at work

BELOW 5100 ft.

—in the McLean No. 14 Well of the Sun Oil Co. at Spindletop—made 18 cuts in 4½-in. 15.50-lb. Liner and wire-wrapped Screen—leaving the hole absolutely clean below the 6⅝-in. Casing.

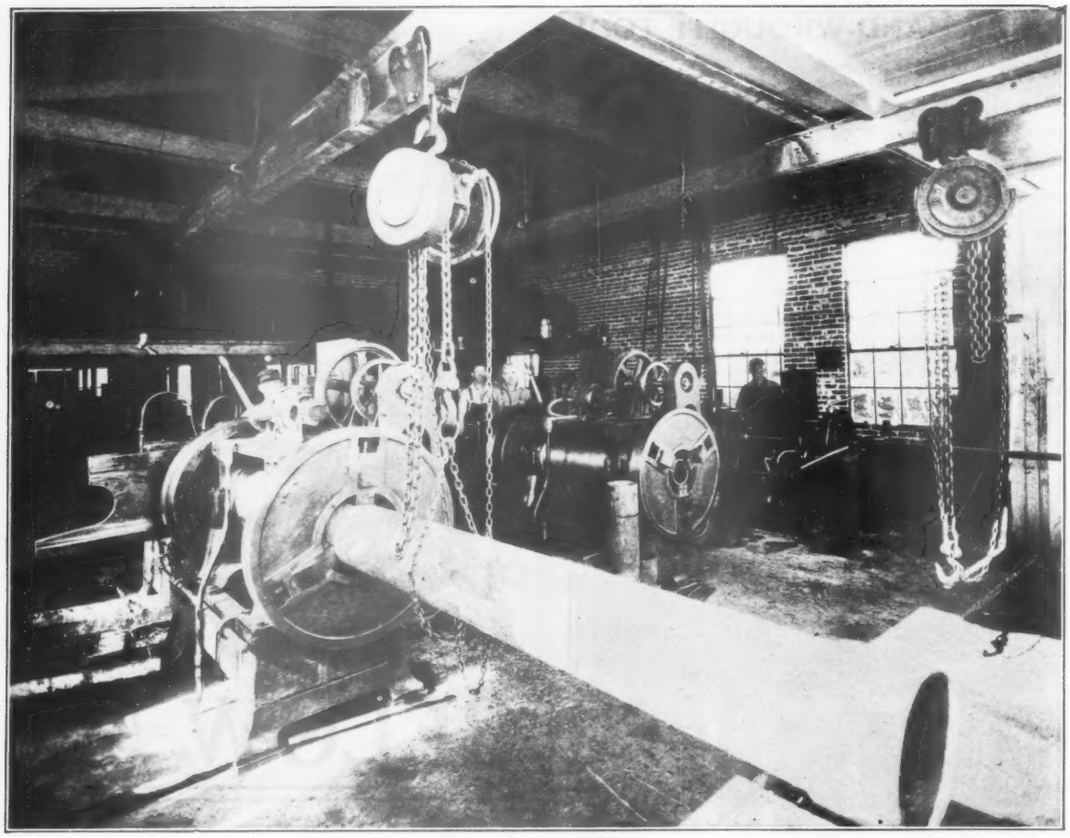
Cutting and Removing Wire-Wrapped Screen and Well Bottom!

PERFORMANCE such as THIS leaves no room for doubt . . . and PROVES the efficiency and the economy of the IMPROVED Abercrombie Inside Cutting Tool.

Cuts can be started at any desired point in pipe or screen by TRIPPING tool.

Write for Full Information

J.S. ABERCROMBIE Co.
616-18 West Bldg., Houston, Texas, U.S.A.



Of course they use B & K

The Mid-Co Pipe & Supply Co. of Tulsa, Okla., do a thriving business in pipe and casing. Their pipe threading machines are an important factor in their success. As any pipe man would expect, they use Bignall & Keeler machines. The illustration shows a No. 4 Peerless, a No. 10 Duplex and a No. 12 Duplex. Two of these have been in continuous operation for about eight years and the other about four years. Much of the time they have been working night and day, and still they are in perfect working condition. Mr. Novak has installed a No. 8 Duplex machine since the above photograph was taken.

Shop men in the oil fields prefer B & K pipe threading machines because they produce perfect threads for less money.

Bignall & Keeler Machine Works
of the N. O. Nelson Manufacturing Co.
Edwardsville, Ill.

PEERLESS B&K DUPLEX P.D.Q.C

O&GJ 12-29 Gray

Natchitoches and 72 miles south of Shreveport.

Wanted Artesian Water

One of the first things Old 'Manuel did on coming into management of the property was to hunt for a new source of water supply for the plantation. There were a number of dug wells, but old Manuel wanted artesian water and cast about for tools with which to go after it.

There were no such in the country and Old 'Manuel was stopped before he started. Stopped, that is, until there happened along a Frenchman of whom nothing is known by the present Prudhommes except that he appeared to be more or less a jack of all trades, doctor, engineer, trader, beau and adventurer extraordinary. This Doctor Brischet, initials forgotten by the present 'Manuel Prudhomme, drew some designs for a sort of magnified post hole auger and Old 'Manuel took them to one of his slaves, a gigantic negro known as Solomon, who was as proud of his Virginia origin as he was of his craftsmanship as a blacksmith.

In this trade and his skill at it his pride was inordinate so great that "as proud as Solomon" is a Prudhomme family by-word. But with it, it is a family tradition that he never said positively he could or could not make any certain tool or device when a drawing of it was shown him. It was always "I'll try, sah" in answering the question. He could neither read nor write, but shown whatever letter or device was desired, he could and did turn out dies for branding stock as sharp and clear cut as if stamped out by a modern press. The cypress planks of the door of his shop still bear the "proofs" of his efforts in that direction.

Well, to Solomon went Old 'Manuel with his designs for the tools with which he proposed to drill his artesian well, and Solomon eventually turned them out, hammering them out on the anvil in his plantation blacksmith shop which is still standing at Bermuda. It is not known just how many he made, but to date 22 pieces have been found by P. Phanor Prudhomme, present owner of Oakland, and a half dozen pieces of drill stem, iron bars ranging from 1½ to 2 inches square and about 20 feet long, have been recovered.

The Prudhommes say they remember having seen these, as boys and young men, stacked 4 or 5 feet high in the blacksmith shop, but the stack dwindled steadily, for whenever a piece of iron was needed to repair plantation equipment or to make a new tool to suit the particular job in hand, the material was taken from the stack of drill stems.

Queer Drilling Tools

Included in the collection of well tools saved from the blast furnace during the World War hysteria of salvaging everything usable are several bits of curious design, reamers, two bailers and one square reamer.

One of the auger bits is a double-pointed corkscrew; another is very much like the modern cable tool bit, besides which it would stack up like a toothpick to a bridge timber, while there are several others of various sizes which resemble the old-fashioned pencil sharpener that used to whittle down our pencils but never put a satisfactory point on them. Still others are cone shaped with a spiral cutting edge welded or bolted to the cone. Among the lot are other bits shaped like post-hole spades with an auger bit at the point, possibly the ancestor of the modern reaming cone bits. The use to which some of these primitive drilling tools were put has not been figured out, but it is evident that they were made to suit the occasion and for use in the various hard and soft strata through which the well was drilled.

One of the bailers is about 4 feet long and 3 or 4 inches in diameter and has a hinged valve. The other is about 2 feet long and 8 to 10 inches in diameter and has a ball valve of hand wrought iron 2 or 3 inches in diameter. Just why the valve seat looks more like a gridiron than the orthodox solid valve seat has not been explained.

The purpose of another tool, about 1 footh square, made of four 3-inch straps sharpened at the bottom edge and finished with a yoke which evidently bolted to the drill stem, caused speculation until it was suggested that it probably was used in squaring the hole to permit it being cased with cypress planks. Probably correct, as the Drake who drilled the salt water wells at the old Drake salt works in Bienville Parish had to use cypress logs with a hole bored through them for his casing, not having anything with which to square his holes.

For his derrick, which was used by P. Phanor Prudhomme and his father before him until a few years ago in handling heavy objects on the plantation, Old 'Manuel had two cypress trees cut and trimmed into logs 20 to 25 feet long and about 10 inches in diameter. These he fastened together with cypress dowels into a V-shaped arrangement with a windlass hung in dowels near the bottom and a cross bar on which to hang a block fastened near the apex and also held in place with dowels 2 or 3 inches thick cut from cypress.

The windlass was about as interesting a detail of the rig as the tools. Fashioned from another cypress log, it had ratchets cut in the circumference at each end and was also provided with a series of notches in which capstan bars were inserted for turning the windlass. Slave labor furnished the power.

Rotary Tool Employed

With this arrangement the tools were raised and lowered in the hole, and with the same slave labor for a drilling engine the tools—some of them at any rate—were rotated in the hole, for the rig seems to have been a combination cable tool and rotary outfit. At least, the recollections of the Prudhommes, pieced together, indicate that such was the case.

So, having his tools and his derrick and his power, Old 'Manuel started work. His first location was near the bank of what was then Red River and he had made several hundred feet of hole—the Prudhommes are not sure and do not agree on how many; some of them say 400, some of them 600 feet—when he hit an obstruction of some sort, whether rock or a long buried cypress log nobody knows. At any rate the tools were deflected one after another, first to one side and then to another. Several of the various bits contained in the collection were fashioned from designs drawn by the versatile Doctor Brischet to meet the emergency, but none of them did and the hole was abandoned and the rig moved a few hundred feet nearer the house—which occupied the site and was built on the same foundation that support the present "big house" of Oakland plantation.

But here again Old 'Manuel had bad luck in his search for artesian water. As in the case of the first hole, the tools went through various hard and soft strata, one of them probably lignite to judge from the present 'Manuel's story of a variety of minerals having been encountered and finally hit an obstruction of some sort beyond which they could not go. Specimens of these minerals were sent to the Centinnial Exposition at Chicago with Louisiana's state exhibit and were lost, he said.

Also, as in the first well, "damp" as they called natural gas in those days, was developed at two or three levels but how deep the Prudhommes would not venture to say, reverting always to "I don't remember. I've heard my father (or grandfather, depending on whether 'Manuel or Phanor was talking) say, but I've forgotten. If we only had the log we could find out, for its got the whole record; date and everything."

There was enough of the gas at any rate for Solomon to amuse the little Prudhommes by lighting it and letting it burn. And when they were bad little Prudhommes he'd tell them the flame came straight from the region they were going if they didn't behave themselves.

P. Phanor Prudhomme, 65 years old, grandson, Emanuel Prodhomme, 83-year-o'd son of Old 'Manuel, and Alex Cloutier, grandson of Mrs. Metoyre (deceased), say they have childhood recollections of the black Vulcan who forged these ancient tools. He was black as midnight and of tremendous physique—

(Continued on Page 272)

REPUBLIC

Hydrostatic Testing

Each length of Republic Wrought Steel Pipe must pass the hydrostatic test required by the specifications.

In the picture you will see the gauge and pressure on the pipe. No detail is overlooked in producing a good, reliable oil country product.

Write for Quotations.

Tubing—
Casing—
Line—
Drive—
Rotary
Drill
Pipe

REPUBLIC IRON & STEEL COMPANY

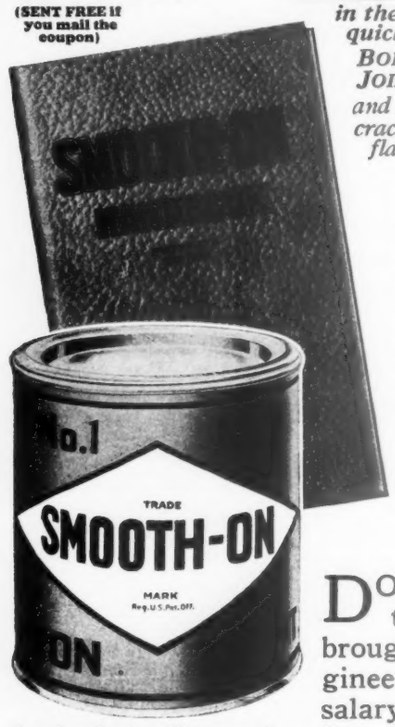
GENERAL OFFICES: REPUBLIC BLDG., YOUNGSTOWN, OHIO

SALES OFFICES: Boston New York Philadelphia Detroit Birmingham St. Louis San Francisco Cincinnati Chicago Pittsburgh Dallas Denver Buffalo Cleveland El Paso

Two GOOD RESOLUTIONS for the NEW YEAR!

First: *Read the* **SMOOTH-ON HANDBOOK** **(SENT FREE if you mail the coupon)**

Second: *Keep a stock of* **SMOOTH-ON** *in the store-room for quick repairs to* BOILERS, ENGINES JOINTS in PIPE LINES *and for stopping leaks at cracks, breaks, seams, flanges and threads*



The Smooth-On Handbook has 136 pages of data and 193 diagrams, illustrations and practical hints on at least 200 different uses of Smooth-On.

Its pages also include complete descriptions and directions for using all the Smooth-On products and for selecting the one that is best suited in each instance.

Every Engineer and plant manager should have a copy.

DOING these two things has brought many an Engineer a substantial salary increase because he had the "know-how" in an emergency and was prepared.

The Smooth-On Handbook is good reading about your daily routine and about sudden repairs that may some day stare you in the face. Applying its simple directions and diagrams can avoid work, worry, overtime and expense, and you will enjoy the many descriptions and pictures of actual experiences where all this has been done. You'll read your copy twice and then want it on your desk for quick reference.

Get the Smooth-On Handbook free by returning the coupon, and get Smooth-On in 1 or 5-lb. can or 25, 50 or 100-lb. keg from your nearest dealer or if necessary from us.

Mail this coupon

SMOOTH-ON MFG. CO.
Dept. 66, 570 Communipaw Ave., Jersey City, N. J.

Please send a copy of the SMOOTH-ON Handbook, 20th Edition.
Name

Address

1-28

SMOOTH-ON

FUTURE VALUE OF PIPE LINES; PLACE IN INDUSTRY IS ASSURED

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Dec. 24.—The oil industry has placed an enormous investment in oil pipe lines. It has been estimated as high as $900,000,000. During recent years of startling changes in the sources of oil and the demand for petroleum products, momentous changes have occurred in the pipe line industry, which have tested to the marrow the fundamental value of the principal pipe line systems in the United States, and, it is believed, have established them as a permanent and irremovable factor in the industry.

The American oil pipe line systems may be divided roughly into four geographical divisions. The largest division embodies the trunk and gathering lines in the Southwest. Next is the trunk and gathering system reaching from the Southwest to the Atlantic Seaboard. Third in importance are the pipe lines of the Pacific Coast; and fourth is the trunk line reaching from the Rocky Mountain district to the Southwest and gathering lines in the Rocky Mountain district, regarded as the commencement of a new system to grow with the development of Rocky Mountain production.

The basis of the value of the pipe lines is the fact that pipe lines offer the cheapest method of land transportation of crude oil, and that in this country of enormous land distances and big consumption of oil, the pipe line in most sections will have little or no competition from other means of oil transportation. It is presumed that the consumption of petroleum products will continue to grow, that the refineries will grow in proportion, and that finally, the demand for pipe line transportation of crude will also increase. It is not likely that in the event of increasing dependence on imported oil, coastal refineries will take the inland business away from inland refineries, largely because of the pipe lines. It will always, according to present knowledge, be more economical to transport the imported crude to inland refineries by means of pipe lines, than to transport refined oil products by railroad from coastal refineries to inland points. The inland water facilities of the United States will be used to an increasing extent, but these are extremely limited, and probably will be for years to come. Hence, the future of the inland refineries of the United States—representing at least 1,000,000 bbls. daily capacity—is bound up in that of the pipe lines, and vice versa.

Growth of Present Systems

The first trunk line emanated from the western Pennsylvania fields, and reached to the Atlantic Seaboard. The growth of the pipe line system followed that of production westward, first into Ohio, then Indiana, Illinois, and so on to the Mid-Continent. The Mid-Continent lines were later extended southward to the Gulf Coast. Since the World War the principal extension was that of the trunk line from the Southwest to the Rocky Mountain district in Wyoming. In addition, there has been a rapid growth of gathering and trunk systems throughout the Southwest, including the recent lines into West Texas. In California the development of the so-called Los Angeles Basin fields resulted in the extension of pipe lines inland from the port of Los Angeles, and other California coastal points, and the extension of existing lines from the northern to the southern fields.

The oldest pipe line system—that extending from the Mid-Continent Field to the Atlantic Seaboard, has not expanded as rapidly as most of the other systems. In fact no substantial increase in capacity has taken place since well before the World War During the war one trunk line—that of the United States Pipe Line Co. was taken up and the com the war the trunk line of the Crescent Pipe Line Co. was taken and the company liquidated, so that the trunk line capacity to the Atlantic Seaboard has actually been reduced.

The course of events in connection with the operation of this system has caused some to believe that its place in the oil industry has been lost, and that the subtractions which have been made are the first of a general demolition of the system. This is far from the truth, if the word of prominent pipe line authorities is a criterion. In fact the eastern pipe line system is undergoing a readjustment. Just how far this readjustment will go cannot now be determined, but when it is completed, the eastern system will still be one of the most important integral parts of the oil business, and it will also be in a position to grow with the new expansion which the oil industry is bound to have.

The eastern pipe line system, or especially that part east of the Mississippi River, is the only one consisting of companies operating independently of producers or refiners. For this reason the eastern system represents a study of special interest to students of the pipe line industry.

The Eastern Pipe Lines

The members of the eastern pipe line system which do no business west of the Mississippi are the Buckeye Pipe Line Co., Cumberland Pipe Line Co., Eureka Pipe Line Co., Indiana Pipe Line Co., National Transit Co., New York Transit Co., Northern Pipe Line Co., Southern Pipe Line Co., and the Southwest Pennsylvania Pipe Lines Co. The Illinois and Prairie Pipe Line companies are part of the system, but they also operate west of the Mississippi and therefore have a different outlook than the other units.

The lines named have gathering systems tapping all of the principal oil fields east of the Mississippi and their trunk lines, all connecting, form a single system operating from western Indiana to the Atlantic Seaboard, connecting also with the principal inland oil refineries east of the Mississippi River.

This system comprises the pioneer pipe lines of the American oil industry, and one which is probably most affected by the rapid changes in the industry of the past decade. The production of the eastern fields served by these lines has decreased gradually. The trunk system has carried less southwestern oil to the Atlantic Seaboard because of the greater amount of crude moved to the Atlantic Coast refineries by oil tank steamer from the Gulf and Pacific Coasts of the United States, from Mexico, Colombia, Venezuela and other countries.

The effect of these changes has been modified somewhat by the fact that these pipe lines served fields producing a particularly high grade of crude, always in demand to some degree by the Atlantic refineries. Also, the runs to inland refineries have increased gradually as the capacity of the refineries has increased to meet the increased consumption of oil.

Effect of Seminole

Nevertheless, the decline in "through" movement of oil from the Mid-Continent to the Atlantic Seaboard has been reflected in smaller earnings of the pipe lines in the eastern system, in many instances. These earnings had dropped yearly until late in 1926. Then and during 1927, business increased as a result of a special situation. The great increase in Seminole oil production overtaxed storage facilities in the Mid-Continent and caused many Atlantic Coast refineries to move more oil out of the Mid-Continent into eastern storage, as it was produced. Hence, the business of many of the pipe lines in the eastern system in 1927 is expected to exceed that of 1926. This situation, however, is temporary, as Seminole is already declining.

The temporary adversity suffered by many of the eastern lines came after decades of profitable business during which they had accumulated large sur-

(Continued on Page 276)

Inspection Proof

Special Mid-Continent Bright Stock and Neutrals

Any and every inspection test can be applied to Pure Oil Petroleum Products with the assurance they will "make good." Inspection is proof of Pure Oil quality.

This company has won and is holding its great success because of its quality standards based upon rigidly enforced specifications, and you get Service,--Action,--Delivery on the Dot.

Phone, Wire or Write.

THE PURE OIL COMPANY
U. S. A.

Independent—and successful, through unvarying high quality in all its products.

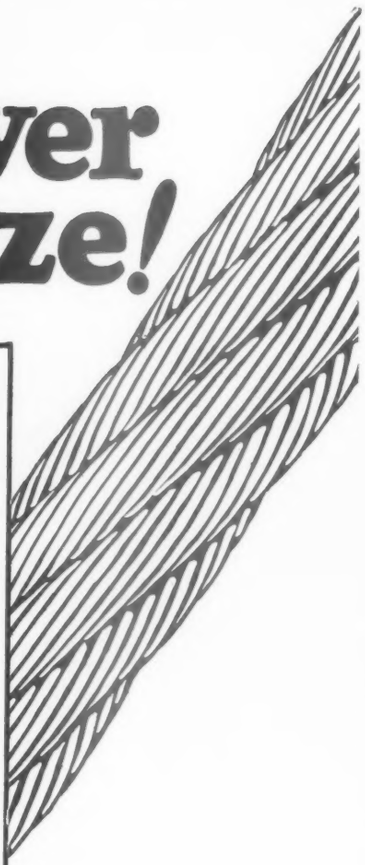
Sales Offices

CHICAGO
NEW YORK
PHILADELPHIA
PITTSBURGH
COLUMBUS, O.
MINNEAPOLIS
TULSA, OKLA.
CHARLESTON, W. VA
ATLANTA, GA.
BEAUMONT, TEX.
PENSACOLA, FLA.

Refineries

MUSKOGEE, OKLA.
ARDMORE, OKLA.
SMITH'S BLUFFS, TEX.
HEATH, OHIO
MARCUS HOOK, PA.
CABIN CREEK JCT., W. VA.

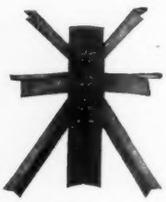
Over size!



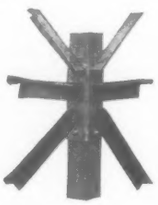
Macwhyte Wire Lines are made oversize. The oversize construction contains a greater amount of steel—produces a stronger rope with longer life. Write for location of stocks. Macwhyte Company, 2916 Fourteenth Avenue, Kenosha, Wis.

MACWHYTE
Wire Lines

Why Experiment? O'Brien Derricks Will Drill Your Wells and Pull Your Casing



The inside construction of a joint in an O'Brien Derrick. The inside and outside reinforcing plates form a slot to receive the next higher leg.



Outside joint of an O'Brien Derrick. The slot formed by the two plates holds the legs in place, while bolting up, thus making fast erection easy.

O'BRIEN DERRICKS

Substantial and Safe in Any Field

Scientifically designed to meet the tremendous stresses and strains in drilling, there is no uncertainty about what O'Brien Derricks can do. Two dozen deep wells with a single O'Brien is not unusual service for these rigs. They are as permanent as it is possible to make them. Rugged, fireproof, windproof, easily erected and dismantled.

An O'Brien Derrick isn't cheap—but it is THE economical derrick from the time you buy it until the last well it's used on.

O'Brien Steel Construction Company, Inc.
Washington, Penna.
Western Representative:
RIG EQUIPMENT COMPANY, 1524 So. St. Louis St., Tulsa, Okla.

NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE FIRST REPORTS

Gray County

Danciger Oil & Refining Co. and others' No. 6 W. Jackson, 990 feet north and 330 feet east of SW cor., Section 88, Block B-2, H. & G. N. Survey. Same company's No. 7 W. Jackson, 330 feet north and east of SW cor. NW, Section 88, Block B-2, H. & G. N. Survey. Midwest Exploration Co.'s No. 1 L. Holmes, 330 feet south and east of NW cor. of the west 60 acres of the north 80 acres of the SW Section 86, Block 3, I. & G. N. Survey.

Hutchinson County

Harris and others' No. 1 J. Q. Best, 330 feet south and east of the NW cor., Section 10, Block Y-2, T. T. R. R. Survey.

NORTH CENTRAL AND WEST TEXAS FIRST REPORTS

Archer County

Continental Oil Co. and Perkins & Cullum's No. 6 L. F. Wilson, 855 feet north and 450 feet east of the SW cor. SW SE, Section 114, A. T. N. C. L. Survey. Grebin and others' No. 1 W. T. Waggoner, 1,000 feet south and 150 feet west of the NE cor., Section 3, H. & T. C. Survey, A-201. Kentucky Oil Corp. and Hines' No. 1 L. F. Wilson, 150 feet north and 1,650 feet west of SE cor. of the south 83.3 acres of the north 166.6 acres of Section C, Club Ranch Subdivision. Seaberry & Brand's No. 2 J. J. Perkins and others, 750 feet north and 150 feet west of SE cor. of the E half of SE, Section 22, Denton County School Land, League 3, A-117. Shappell Oil Co.'s No. 13 L. F. Wilson-B, 490 feet south and 450 feet east of the NW cor. of their 40-acre "B" lease out of Section 4, S. P. R. R. Survey, A-1,276. Same company's No. 14 L. F. Wilson-B, 628 feet north and 150 feet west of the SE cor. of their 40-acre lease "B" out of Section 4, S. P. R. R. Survey, A-1,276. Same company's No. 15 L. F. Wilson-B, 875 feet north and 150 feet west of the SE cor. of their 40-acre "B" lease out of Section 4, S. P. R. R. Survey, A-1,276. Same company's No. 16 L. F. Wilson-B, 275 feet north and 150 feet west of the SE cor. of their 40-acre "B" lease out of Section 4, S. P. R. R. Survey, A-1,276. Same company's No. 17 L. F. Wilson-B, 150 feet north and 400 feet west of the SE cor. of their 40-acre "B" lease out of Section 4, S. P. R. R. Survey, A-1,276. Burns and The Texas Company's No. 3 L. T. Burns, 150 feet south and east of the NW cor. of the east 40 acres of Section 27, Club Ranch Subdivision. H. Hines and The Texas Company's No. 2 W. R. Farmer, 600 feet north and west of the SE cor., Section 17, North Anderson Ranch Subdivision.

Carey & Rhader's No. 3 W. R. Farmer, 2,948 feet south and 3,005 feet east of the NW cor., Section 1, J. Poitevent Survey, A-347, being 150 feet north and west of the SE cor. of their 20-acre lease. Madden & Hunt's No. 1 E. A. Hausler, 150 feet south and west of the NE cor. NW NW, Section 2, J. Poitevent Survey, A-1,149. Panhandle Refining Co. and Grisham's No. 2 W. R. Farmer, 2,042 feet north and 3,658 feet east of the SW cor., Section 1, J. Poitevent Survey, A-347, being 150 feet south and 450 feet east of the NW cor. of their 80-acre lease. Lee Wilson's No. 3 W. R. Farmer, 2,948 feet south and 3,605 feet east of the NW cor., Section 1, J. Poitevent Survey, A-347, being 150 feet north and 450 feet east of the SW cor. of his 40-acre lease.

Brown County

Daniels and others' No. 1 H. L. Allcorn, 2,952 feet south and 1,485 feet west of the NE cor. of the R. Honeycutt Survey No. 623. Gilman & McMurray's No. 1 Roy Hickman, 2,200 feet south and 1,600 feet west of the NE cor. of the Thomas Benson Survey No. 783, being 155 feet north and 1,600 feet west of the SE cor. of their lease. Selby Oil & Gas Co.'s No. 23 H. L. Ellis, 1,910 feet south and 150 feet west of the NE cor. of the H. J. Ellis 130-acre tract out of Section 3, S. A. & M. G. Survey, A-850. Senior Petroleum Co.'s No. 1 James Baker, 950 feet south and 150 feet west of the NE cor. of Section 10, A. White Survey No. 161. Mark Curtis' No. 1 Gus Fuller, 150 feet north and east of the SW cor., Section 44, A. D. Neill Survey. Natural Gas & Fuel Co.'s No. 1 Mrs. S. A. Capps, 150 feet southeast of the northwest line and 600 feet southwest of the northeast line of the Mrs. S. A. Capps 781-acre tract out of the P. Sullivan Survey No. 17. Palmer & Metz' No. 1 L. L. and M. A. Childers, 660 feet north and 525 feet west of the SE cor. SW, Section 10, H. T. & B. Survey, A-878. Van Bibber & Lehman's No. 4 A. C. Evans, 450 feet north and 1,726 feet east of the SW cor. of the A. C. Evans 106.5-acre tract out of the J. Woodward Survey No. 20.

Callahan County

Peer Oil Co.'s No. 1 A. L. Biggerstaff, 150 feet north and west of the SE cor., Section 304, S. P. R. R. Survey. Young & Alexander's No. 1 W. T. Wheeler, 150 feet north and west of the SE cor. NW SW, Section 119, B. B. B. & C. Survey.

Coleman County

Midwest Exploration Co.'s No. 1 M. T. Overall, 150 feet north and 927 feet east of the SW cor. of the R. H. Overall Survey No. 66, A-987. Slaughter and others' No. 1 W. J. Idol, 300 feet north and 1,170 feet west of the SE cor. of the W. J. Idol 378-acre tract out of the H. R. Starkweather Survey No. 266, A-1,004.

Cooke County

Simms Oil Co. and others' No. 1 Joe Bowers, 150 feet south and 1,200 feet east of the NW cor. of the T. Toby Survey, A-1,050.

Eastland County

Mook-Texas Oil Co.'s No. 2 U. Casey-B, 1,840 feet north and 950 feet east of the SW cor. of the U. Casey 253-acre tract out of the W. Van Norman Survey. Gulf Production Co.'s No. 1 W. U. Fox-A, 505 feet north and 150 feet east of the SW cor. of the west 10 acres of Section 67, League 3 and 4, McLennan County School Land.

Howard County

Coyle-Concord Oil Co.'s No. 3 Dora Roberts, 1,470 feet south and 660 feet west of the NE cor., Section 156, Block 29, W. & N. W. Survey. Lockhart & Co.'s No. 1 Dora Roberts, 1,650 feet south and 2,310 feet west of the NE cor., Section 157, Block 29, W. & N. W. Survey. Sun Oil Co.'s No. 1 W. R. Settles, 330 feet north and west of the SE cor., Section 135, Block 29, W. & N. W. Survey. Keekley Oil Corp. and others' No. 1 Dora Roberts, 2,490 feet north and 990 feet west of the SE cor., Section 156, Block 29, W. & N. W. Survey.

Jack County

W. B. Albright's No. 1 Mrs. R. Brothers and others, 150 feet north and 660 feet east of the SW cor. NW of the M. Logue Survey, A-1,754. Christie Brothers' No. 3 J. A. Jones estate, 150 feet north and 850 feet east of the SW cor. of the north 240 acres of Section 5, S. P. R. R. Survey, A-550. Dale Oil Corp.'s No. 4 William Hanna, 769 feet south and 1,500 feet east of the NW cor., Section 3,313, T. E. & L. Survey.

Mitchell County

The California Co.'s No. 4 W. L. Foster, Lease No. 1, 1,650 feet north and 990 feet east of the SW cor., Section 6, Block 29, T-1-S, T. P. R. R. Survey.

Midland County

Shoup and others' No. 1 Roy Parks, C NW, Section 34, Block 41, T-2-S, T. P. R. R. Survey.

Montague County

Archer Drilling Co.'s No. 1 M. J. Fortune, 150 feet south and 461 feet east of the NW cor. of the west 37 acres of the M. J. Fortune 137.5-acre tract out of the George Nichols Survey, A-571. Bridwell & Heydrick's No. 1 Mrs. L. Cunningham, 3,058 feet north and 150 feet west

P. I. W. PRODUCTS

"Pennsylvania" Tank Cars
Oil Refinery Equipment
Tanks up to 120,000 Bbls. capacity
Agitators
Stills
Condenser Boxes
Smokestacks
Standpipes
Water Tanks
Penstocks
Riveted Steel Pipe
Metal Ladles
Annealing Boxes
Blast Furnace Equipment
Storage Bins
General Light and Heavy Steel Plate Construction
P. I. W. Steel Shipping Barrels

WELDED PRESSURE VESSELS

Restricted in size only by transportation limits—wall thickness up to 3½" and heavier.

P.I.W. welded pressure vessels take care of the exacting demands of the Oil Industry for cracking units that will withstand terrific strains.

Because of the obvious importance of the weld (which must properly fuse and form a perfect bond with the shell) it was but natural that P. I. W. should develop an electric welding method which is so far advanced over ordinary commercial welding methods as to take it beyond the realm of competition.

The resources and experience of an organization that has specialized in steel plate construction for over thirty-five years have been concentrated on producing welded pressure vessels that have set up new standards of strength and which will endure heretofore unheard of pressures continuously sustained.

Write for literature describing an unusual test of P.I.W. Welding.

P.I.W. STEEL PLATE CONSTRUCTION

BRANCH PLANT
Beaumont, Texas

THE
PETROLEUM IRON WORKS COMPANY

NEW YORK · CHICAGO · SHARON, PA. · HOUSTON · TULSA

UNVARYING

The unvarying quality and performance of Diamond "H" Bit and Jar Steel has solved the steel problems for a number of drilling tool manufacturers. It will pay you to investigate it.

DIAMOND—"H"— Bit and Jar Steel

Is forged from bottom poured open hearth ingots by specialized workmen. Compare results in the drilling field.

HEPPENSTALL Forge & Knife Co.

Pittsburgh, Penna.

Fort Worth — Texas Office
1415 F. & M. Bank Building

"A REAL OIL COUNTRY BELT"

OIL GAS

Pumping—Drilling — Compressor
Double-Stitched

BELTS

RUGGED DURABLE

Not just A belt but a REAL POWER TRANSMITTER

ECONOMICAL

Manufactured by

IMPERIAL BELTING CO., Chicago

Sold by

OIL WELL SUPPLY CO.

In All Fields

of the SE cor. of the T. R. Edmondson Survey, A-222, being 150 feet south and west of the NE cor. of their 35.3-acre lease. Same company's No. 1 Mrs. M. H. Salmon and others-C, 3,545 feet south and 5,069 feet west of the most easterly NE cor. of the S. Little Survey, A-417, being 1,050 feet south and 150 feet east of the NW cor. of their 125-acre "C" lease (square).

Carter & Rycade Oil Co.'s No. 1 R. W. Cunningham and others, 150 feet south and 750 feet east of the NW cor. of the L. B. Norton Survey, A-574, being 150 feet south and 450 feet west of the NE cor. of their 20-acre lease. Continental Oil Co.'s No. 2 Mrs. E. C. Edmondson, 150 feet south and west of the NE cor. of the south 60 acres of the Mrs. E. C. Edmondson 96.5-acre tract out of the T. R. Edmondson Survey, A-222. Continental Oil Co.'s No. 1 W. W. Jones-A, 950 feet south and 2,500 feet east of the NW cor. of the William Donoho Survey, A-178, being 450 feet north and 150 feet west of the SE cor. of their 100-acre "A" lease.

Haskell County

S. S. Kouri's No. 1 Reynolds Cattle Co., 500 feet south and west of the NE cor. SW, Section 102, J. A. Nabers Survey, A-507.

Pecos County

Douglas Oil Co.'s No. 2 Myrtle Sellman, 990 feet north and 2,310 feet east of the SW cor., Section 14, Block Z, T. C. R. R. Survey. Humble Oil & Refining Co.'s No. 3 M. A. Smith-B, 200 feet south and east of the NW cor., Section 101, Block 194, G. C. & S. F. Survey. McMan Oil & Gas Co.'s No. 1 J. H. Tippett, 200 feet south and west of the NE cor. of the south 80 acres of Section 108, Block 194, G. C. & S. F. Survey. Roxana Petroleum Corp.'s No. 5 M. A. Smith, 1,100 feet north and 2,071 feet east of the SW cor., Section 27, Block 194, G. C. & S. F. Survey. Same corporation's No. 5 J. H. Tippett, 1,662 feet north and 1,673 feet west of the SE cor., Section 102, Block 194, G. C. & S. F. Survey. Same corporation's No. 6 J. H. Tippett, 1,662 feet north and 2,344 feet west of the SE cor., Section 102, Block 194, G. C. & S. F. Survey. Gulf Production Co.'s No. 4 I. G. Yates, 719 feet north and 200 feet east of the SW cor. of Runnels County School Land Survey, A-2,169. Same company's No. 5 I. G. Yates, 200 feet north and east of the SW cor. of Runnels County School Land Survey, A-2,169. Same company's No. 6 I. G. Yates, 330 feet north and 3,805 feet east of the NW cor., Section 102, Block 194, G. C. & S. F. Survey, and located in Runnels County School Land Survey, A-2,169. Same company's No. 7 I. G. Yates, 330 feet north and 990 feet east of the NW cor., Section 103, Block 194, G. C. & S. F. Survey, and located in Runnels County School Land Survey, A-2,169.

Stephens County

Hanlon Gasoline Co.'s No. 1 Floyd Vick, 1,940 feet north and 2,010 feet east of the SW cor., Section 57, Block 5, T. P. R. R. Survey.

Terrell County

Humble Oil & Refining Co.'s No. 1 University Land, 490 feet south and 2,790 feet west of the NE cor., Section 15, Block 34, University Land.

Upton County

T. P. Coal & Oil Co.'s No. 11 J. F. Lane-A, 2,970 feet north and 990 feet east of the SW cor., Section 5, G. C. & S. F. Survey, A-213.

Wichita County

The Ascot Co.'s No. 40 J. E. Roller, 450 feet south and 500 feet west of the NE cor. of their lease out of the W. A. Grady Survey, A-351. Same company's No. 41 J. E. Roller, 250 feet south and 500 feet west of the NE cor. of same lease. Same company's No. 42 J. E. Roller, 200 feet south and 760 feet west of the NE cor., same lease. Same company's No. 43 J. E. Roller, 750 feet south and 150 feet west of NE cor. of same lease. Same company's No. 44 J. E. Roller, 480 feet south and 700 feet west of the NE cor. of same lease. Same company's No. 45 J. E. Roller, 150 feet south and 450 feet west of the NE cor. of same lease. Dale Oil Corp.'s No. 5-A Kemp & Kempner-B, 180 feet south and 210 feet east of the NW cor. of the E half of Section 17, Kemp Wichita Valley Lands. O'Donohoe & Gates' No. 2 Shallow M. A. Love, 500 feet south and 145 feet west of the NE cor. of the west 10 acres of the south 25 acres of Lot No. 11, W. S. Kennard Survey, A-171.

Wilbarger County

Phillips Petroleum Co.'s No. 10 W. T. Waggoner-T, 170 feet north and 650 feet east of the SW cor. NW NW, Section 44, Block 4, H. & T. C. Survey. Same company's No. 11 W. T. Waggoner-T, 220 feet north and 270 feet west of the SE cor. NW NW, Section 44, Block 4, H. & T. C. Survey.

Winkler County

Atlantic Oil Producing Co.'s No. 2 Ida Hendrick-D, 1,650 feet south and 2,310 feet east of the NW cor., Section 29, Block B-5, School Land. Same company's No. 1 T. G. Hendrick-F, 330 feet south and 1,650 feet east of the NW cor., Section 40, Block 26, School Land. Cranfill & Reynolds' No. 1 T. G. Hendrick-C, 330 feet north and 1,650 feet east of the SW cor., Section 33, Block 26, School Land. Independent Oil & Gas Co.'s No. 3 Grisham-Hunter, 1,650 feet north and 990 feet east of the SW cor., Section 34, Block B-5, School Land. Same company's No. 4 Grisham-Hunter, 990 feet north and east of the SW cor., Section 34, Block B-5, School Land. Same company's No. 5 Grisham-Hunter, 330 feet north and 990 feet east of the SW cor., Section 34, Block B-5, School Land. Same company's No. 6 Grisham-Hunter, 330 feet north and east of the SW cor., Section 34, Block B-5, School Land. Same company's No. 7 Grisham-Hunter, 990 feet north and 330 feet east of the SW cor., Section 34, Block B-5, School Land. Same company's No. 8 Grisham-Hunter, 1,650 feet north and 330 feet east of the SW cor., Section 34, Block B-5, School Land. Magnolia Petroleum Co.'s No. 4 Ida Hendrick, 990 feet south and 2,310 feet west of the NE cor., Section 29, Block B-5, School Land. Same company's No. 5 Ida Hendrick, 330 feet south and 1,650 feet west of the NE cor., Section 29, Block B-5, School Land. Same company's No. 6 Ida Hendrick, 1,650 feet south and 2,310 feet west of the NE cor. Section 29, Block B-5, School Land. Roxana Petroleum Corp.'s No. 2 Ida Hendrick-C, 990 feet south and 2,310 feet east of the NW cor., Section 29, Block B-5, School Land.

Young County

E. G. Christie's No. 2 E. R. Carter and others, 450 feet south and 150 feet west of the NE cor., Section 1,591, T. E. & L. Survey. D. L. Wolf and others' No. 1 J. T. Lowe, 450 feet north and 150 feet east of the SW cor. NW, Section 59, T. E. & L. Survey. Godley Oil Co.'s No. 2-A M. K. Graham, 150 feet north and 300 feet west of the SE cor. of their 40-acre lease out of the S. Tankersley Survey, A-278. Paull Oil Co.'s No. 7 J. E. Morrison Co., 285 feet south and 200 feet east of the NW cor. of the east 62 acres of the J. E. Morrison Co. 122-acre tract out of the E. Sherrill Survey, A-271.

Corrected Locations

In Archer County: Burns and The Texas Company's No. 1 L. T. Burns, 150 feet south and west of the NE cor. of the west 40 acres of the east 80 acres of Section 27, Club Ranch Subdivision. Same company's No. 2 L. T. Burns, 150 feet south and east of the NW cor. of the east 80 acres of Section 27, Club Ranch Subdivision.

In Brown County: C. C. Massey's No. 1 E. L. Stewart, 400 feet northeast of the southwest line and 1,500 feet northwest of the southeast line of the James Hagelin Survey No. 354. Panuco Exploration Co.'s No. 1 Roy Shipman, 1,000 feet southwest of the northeast line and 1,100 feet southeast of the northwest line of the Roy Shipman 136-acre tract out of the Samuel Durr Survey No. 161. J. Richardson and O. Hurst's No. 1 D. H. Mears, 2,491 feet northeast of the southwest line and 1,529 feet southeast of the northwest line of the D. H. Mears Survey, A-2,056.

In Montague County: Continental Oil Co.'s No. 1 Mrs. E. C. Edmondson, 225

Gulf Refining Company

OKLAHOMA — TEXAS — LOUISIANA

Refiners of

PETROLEUM

GASOLINE
REFINED OIL
NAPHTHA
GAS OILS
PARAFFINE WAX
PETROLEUM COKE
FUEL OIL
LUBRICATING OILS
CYLINDER
ENGINE
CORDAGE

Red and Pale Paraffine Oils

General Sales Offices: PITTSBURGH, PA.

District Sales Offices:

NEW YORK, HOUSTON, ATLANTA, BOSTON, NEW ORLEANS, PHILADELPHIA, LOUISVILLE

OCEAN TERMINALS

Boston (Beverly), Mass.
Providence, R. I.
New York Harbor (Bayonne, N. J.)
Jacksonville, Fla.
Port Tampa, Fla.
Mobile (Magazine Point, Ala.)
Philadelphia (Girard Point, Pa.)
Charleston, S. C.
Savannah, Ga.
New Orleans (Gretna, La.)
Port Arthur, Texas
Galveston, Texas

Tribloc Chain Hoists

are an asset on any job

Wherever there is hoisting to be done, these sturdy hoists are an asset because their rugged construction definitely assures an instant response to the hand chain under any conditions of load or service.

Triblocs are the most expensive hoist to manufacture, yet each size and type can be purchased for the same price as others of comparable merit. That is why maintenance is such a negligible factor in the operation of these hoists and a reason which quickly reveals why thousands of Triblocs are in use by each of many large industrial organizations and public utilities.

Send for Catalog 7-B.

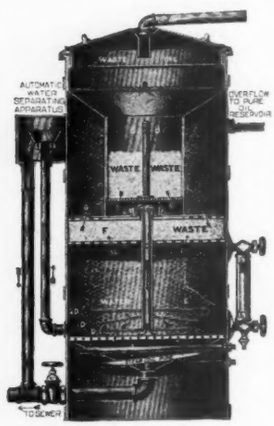
FORD CHAIN BLOCK COMPANY
2nd and Diamond Sts., Philadelphia, Pa.

The loop hand chain guide is always painted GREEN as a mark of quick identification and to point to a feature of Tribloc construction which protects the hoist in operation. The hand chain is effectively guided and prevented from over-riding the hand chain wheel by this Loop Guide, whether it is operated at high speed or at an angle from the hoist.

Look for The Green Loop Guide

BURT CROSS OIL FILTER

Style A



We make and recommend Style "A" for use in filtering lubricating oil where it is used in connection with a continuous oiling system in large quantities.

Do You Burn Fuel Oil?
If so we can keep your burners free from grit or dirt, hence insuring perfect combustion and a clean steady flame at all times. Specially designed and packed Burt filters do the work—write for details.

Crankcase Oil Can Be Reclaimed
so as to give same efficient service as regular fuel oil and at practically no cost.
Service stations would probably be glad to have you haul it away. Also provides storage capacity which can be increased if necessary with a Burt Oil Reservoir.

Over 300,000 Burt Filters are in use in this country, among our customers being the Standard Oil Company, the U. S. Steel Corporation and the U. S. Government, who have given us repeat orders as follows:
The Standard Oil Company, 471 orders.
The U. S. Steel Corporation, 444 orders.
The U. S. Government, 191 orders.

We carry a complete line of oiling systems including filters, overhead reservoirs and pumps. Any Burt Product will be shipped to a responsible Company on a 30 day free trial, to prove their merits on the actual installation.
Write for the complete Burt Catalog.

THE BURT MANUFACTURING COMPANY
929 S. High St., Akron, Ohio
Pioneer Oil Filter Manufacturers

feet south and 321 feet west of the NE cor. of the south 60 acres of the Mrs. E. C. Edmondson 96.5-acre tract out of the T. R. Edmondson Survey, A-222.

In Pecos County: Kirby Petroleum Co. and Edson's No. 1 J. H. Tippett, 719 feet north and 200 feet west of the SW cor. of the Runnel's County School Land Survey, A-2,169, and located in Section 108, Block 194, G. C. & S. F. Survey.

STORY OF THE FIRST GAS WELL RECALLED

(Continued from Page 265)

he wore a 16 size shoe they remember. Indeed, his immense stature, his huge feet and a black beard that almost reached his chest are what make the memory of Solomon stick in their minds, they said. Cloutier, however, gives a different version of Solomon's ownership. He says the negro blacksmith belonged to his grandmother, Mrs. Ben Metoyer, who has been dead for several years.

Exact Date Forgotten

While the exact date at which the wells were drilled is not remembered by the Prudhommes—only the missing log can furnish that—its date seems definitely fixed as being before the Drake well by 'Manuel Prudhomme's recollections of having lain on the ground with his ear over the top listening for the splash of pebbles he dropped into it as a small boy. 'Manuel is 83 years old—born in 1844—and Solomon was an old man and the hole had been in the "big house" yard for many years at that time, 'Manuel says.

Coming closer, it would appear that the wells were drilled shortly before the present 'Manual Prudhomme was born as the original "big house" was built on the site of the present plantation house in 1821 by Old 'Manuel's father when caving banks of Red River led him to move back out of the danger zone.

The timbers and door and window frames for the present dwelling were all cut and fashioned by slave labor in the plantation carpenter shop which now houses the Bermuda postoffice and P. Phanor Prudhomme's general store and filling station. The forge at which Solomon fashioned the drilling tools stands on the opposite side of the "home place" or "big house" lot, and like the "big house" and the carpenter shop, has cypress planks plastered with clay to reduce the fire hazard, and a small mound in the center shows the location of the anvil, while by scratching around in the ground between it and the rear wall some of the handmade brick of which the forge itself was built are uncovered. On either side are the remains of Solomon's work benches and P. Phanor Prudhomme still finds use for his vise.

Relics Saved by Chance

The tools were not found all at one time nor in one place and it is to P. Phanor Prudhomme that credit for their preservation as valuable items for the Louisiana state historical museum, or the oil industry's own collection, should be given. The family had noticed one or two of these odd pieces of iron kicking around the place and the stack of drill stem in the old blacksmith shop had been drawn on for material for farm tools and repairs for years with their historical value not realized.

The V-shaped derrick was used around the plantation in many jobs until it was lost sight of 15 or 20 years ago, Phanor Prudhomme says. It was easily moved from place to place as it could be taken apart and loaded on a wagon, and was kept for a long time under an old barn that burned years ago. It had been used so much and taken apart and put together so many times, Phanor says, that the last time he remembers seeing it the dowel holes and the ratchets and holes for the capstan bars were badly worn.

When the United States entered the World War and the economy hysteria seized the whole country with its meatless and sugarless and wheatless and other 'less days became the vogue, one bright day brought a junk buyer to Oakland as he had visited other plantations in the vicinity buying their worn-out farm machinery and other old iron there might be cluttering up the premises. Someone thought of the iron bars in the blacksmith shop and the two or three queer looking tools rusting away near by and suggested they be disposed of but Phanor declined.

"I don't know why I wanted to keep them," he said. "They were of no use to anyone and were to us then only just what the would-be buyer wanted, scrap iron and junk, but I did. Then after the war I was glad I had saved them. The Homer and Bull Bayou oil boom started a great wave of leasing and lease buyers came down in this country blocking up acreage. Several of them came to us to lease Oakland and more than one of them became greatly interested in the old tools. Then one day I decided to put a mowing machine in the home place yard which had grown up pretty ragged, but before starting it I went over the place to clear it of old lumber and such stuff that had accumulated there through the years and found a couple more old tools, and from time to time we've run across other specimens until we've gathered 22 of them in all. How many more there may be kicking around, hidden away under the barns and outhouses nobody knows."

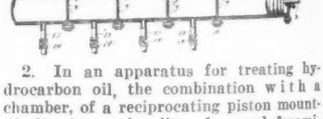
DEWATERING OF GAS WELLS, SERIOUS PROBLEM

(Continued from Page 260)

can be siphoned off periodically without detriment to the wells, the siphon should be designed to operate as efficiently as possible, using one jet with the diameter ratio as suggested above. If the siphons have to operate continuously and the gas can be put in the gathering lines, the jets should be made one-eighth-inch diameter. The number will depend on the volume to be delivered, the size of the siphon line and the differential drop across the siphon line. If orifice well-control is being employed, siphons are particularly adaptable, and the combination has solved many perplexing gas production problems. Regardless of the type used, data should be recorded and preserved to help interpret future problems.

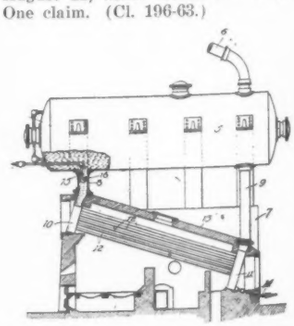
Recent Patents

1,649,103. Apparatus for Treating Emulsified Oil. Gustav Egloff and Harry P. Benner, Chicago, assignors to Universal Oil Products Co., Chicago, a corporation of South Dakota. Filed October 23, 1920. Serial No. 419,055. Renewed February 15, 1927. 3 Claims. (Cl. 196—4.)



2. In an apparatus for treating hydrocarbon oil, the combination with a chamber, of a reciprocating piston mounted therein, a plurality of spaced foraminated plates through which the oil is forced by the piston.

1,649,532. Distillation of Hydrocarbon Oils. Frank A. Howard, New York, N. Y., assignor to Standard Development Co., a corporation of Delaware. Filed August 12, 1920. Serial No. 403,079. One claim. (Cl. 196-63.)



The process of pyrogenetically distilling lower boiling point hydrocarbon oils from higher boiling point hydrocarbon oils which consists in passing a stream of

Powell Valves

ARE PROVEN PRODUCTS

Fig. 102
Bronze Renewable Seat and Disc White Star Globe Valve, Pressures to 200 pounds. X Hvy. to 300 pounds. Sizes ¼ to 3 inches.

Fig. 460
Iron Body Pilot Gate Valve. Pressures to 125 pounds. Sizes ¼ to 3 inches.

Design, construction, accurate processing, and positive testing insure uniform products.

Powell Valves are especially adapted for oil and gas well, field and refinery service, and are processed to be oil and vapor tight.

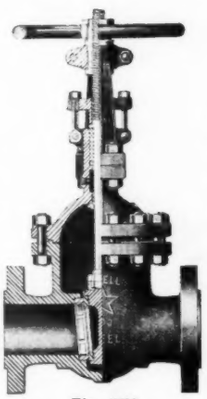


Fig. 4003
Outside Screw & Yoke Steel Gate Valve. Pressures 400 pounds at 750° F. Sizes 4 to 24 inches.

Gate and Globe Valves are obtainable with seat faces especially ground for handling gas, gasoline and other volatile liquids.

We also manufacture special valves approved by Underwriter Laboratories for handling hazardous liquids.

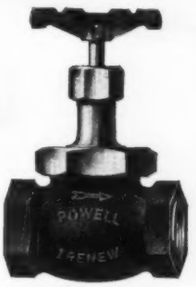


Fig. 190
Iron Body Irenew Globe Valve, Pressures to 150 pounds. X Hvy. to 300 pounds. Sizes ¼ to 3 inch.

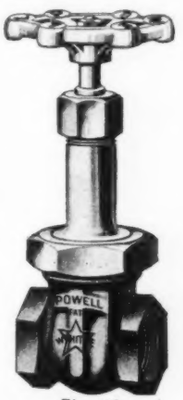


Fig. 315
Bronze Rising Stem White Star Gate Valve. Pressures to 200 pounds. X Hvy. for 300 pounds. Sizes ¼ to 3 inches.

Powell Valves and engineering appliances are stocked by jobbers in all principal oil centers.

THE WM. POWELL CO.
2521-2531 Spring Grove Ave.
CINCINNATI, OHIO

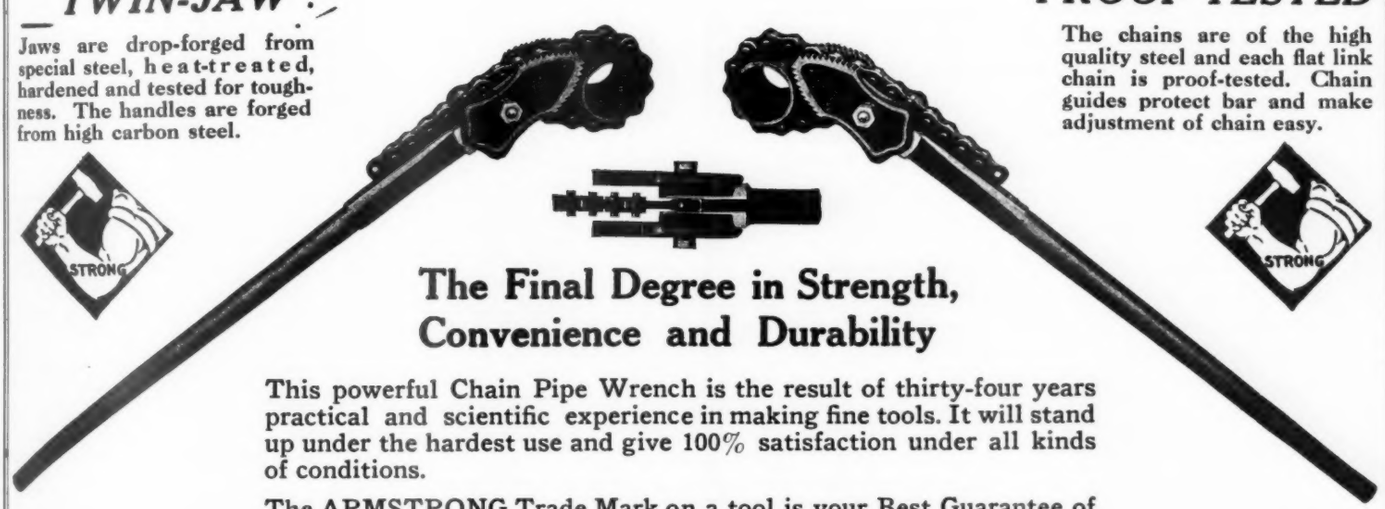
ARMSTRONG CHAIN PIPE WRENCH

TWIN-JAW!

Jaws are drop-forged from special steel, heat-treated, hardened and tested for toughness. The handles are forged from high carbon steel.

PROOF TESTED

The chains are of the high quality steel and each flat link chain is proof-tested. Chain guides protect bar and make adjustment of chain easy.



The Final Degree in Strength, Convenience and Durability

This powerful Chain Pipe Wrench is the result of thirty-four years practical and scientific experience in making fine tools. It will stand up under the hardest use and give 100% satisfaction under all kinds of conditions.

The ARMSTRONG Trade Mark on a tool is your Best Guarantee of Highest Quality Materials, Superior Design and Thorough Workmanship. Pin your faith in the Line of Proved Superiority.

"It's STRONG if it's ARMSTRONG"

Write for free copy of Catalog P-10, which shows the full ARMSTRONG BROS. Line of Quality Pipe Tools, with sizes, descriptions and prices. Sent free on request.

"ARMSTRONG BROS."
Quality Pipe Tools
Stocks and Dies
Pipe Cutters
Pipe Tongs
Pipe Wrenches
Chain Vises
Hinged Vises

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
330 N. Francisco Ave. Chicago, U. S. A.

LONGYEAR Drill Supplies MEAN LOWER COSTS

YOUR diamond drill, operating under the watchful eye of the drill runner, may continue to perform its duty indefinitely. An occasional regulation of the feed, and the rotating drill rods continue their downward progress until a new length must be added or—a rod breaks under heavy torsional strain. When a diamond drill rod twists off or a soft steel bit wears down too fast, endangering the carbon, the true cost of replacement is not the few cents necessary to buy the new part, but the working time lost while the replacement is being made. The breaking of a $10 rod may mean the addition of ten hours of "dead" time to your drilling costs.

The Longyear manufacturing organization, engaged in the production of diamond drills and diamond drill supplies exclusively, is prepared to supply you with drill rods and couplings, core shells, core barrels, blank bits, and other drilling equipment of proven excellence. Our specifications for steel used in their manufacture insure a finished product of proper hardness and toughness to meet the heavy demands of diamond drilling.

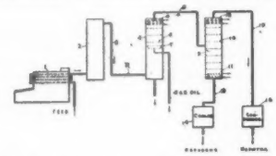
Complete stocks of drilling supplies are on hand at Ponca City, Oklahoma and Marquette, Michigan.

Write for catalog.

E. J. Longyear Company
Minneapolis, Minnesota, U.S.A.

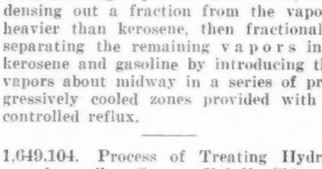
oil upwardly through a heated zone to a bulk supply maintained under pressure, and injecting 3 to 7 per cent upwardly into the oil between the heated zone and the bulk supply.

1,648,967. Process for Continuously Cracking and Fractionating Hydrocarbons. Alexander C. Spencer, Sarnia, Ontario, Canada, assignor to Standard Development Co., a corporation of Delaware. Filed July 3, 1923. Serial No. 649,328. 2 Claims. (Cl. 196—94.)



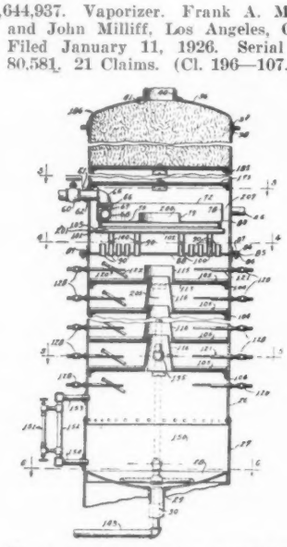
2. A process of the character described, which comprises continuously subjecting a stream of hydrocarbons to heat, allowing vaporization to occur, condensing out a fraction from the vapors heavier than kerosene, then fractionally separating the remaining vapors into kerosene and gasoline by introducing the vapors about midway in a series of progressively cooled zones provided with a controlled reflux.

1,649,104. Process of Treating Hydrocarbon oils. Gustav Egloff, Chicago, and Robert T. Pollock, New York, assignors to Universal Oil Products Co., Chicago, a corporation of South Dakota. Filed December 9, 1920. Serial No. 429,337. Renewed February 5, 1927. 3 Claims. (Cl. 196—5.)



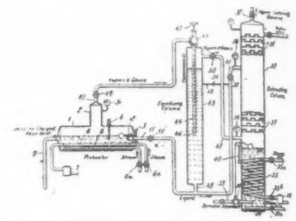
1. A process of treating petroleum oil, consisting in distilling relatively heavy asphaltic and emulsified oils, of a gravity not lighter than 20 degrees Baume, applying heat to the oil at the upper surface of the oil body by means of an electrically-heated element extending above the body of the oil and throughout the still, and during distillation subjecting the oil to a vacuum action in excess of 10 inches.

1,644,937. Vaporizer. Frank A. Milliff and John Milliff, Los Angeles, Calif. Filed January 11, 1926. Serial No. 80,581. 21 Claims. (Cl. 196—107.)



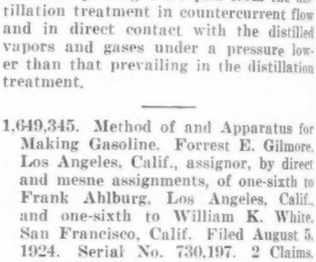
18. A vapor separator comprising a shell; means for admitting hot oil into the top portion of said shell; a series of foraminous members secured in said shell; means for distributing said incoming hot oil uniformly over said foraminous members; means for maintaining a body of residuum in the bottom of said shell below the lowest of said members; a steam pipe so placed as to inject steam into said body of residuum for heating said body of residuum; a series of sleeve members, each centrally secured to one of said foraminous members and extending upwardly therefrom into a sleeve of the next higher foraminous member; steam jets so situated as to produce an upward draft through said sleeves; a mass of metallic material having small continuous passages therethrough situated above said means for admitting hot oil into the top of said shell; and means for withdrawing vapor from above said mass.

1,648,585. Recovery of Gasoline. Eugene C. Herthel and Thomas de Colon Tiffe, Chicago, assignors to Sinclair O. & G. Co., Tulsa, Okla., a corporation of Maine. Filed July 5, 1924. Serial No. 724,199. 10 Claims. (Cl. 196—8.)



1. A process of separating absorbed gasoline from liquid absorbing mediums, which comprises subjecting the gasoline charged medium to a distillation treatment under pressure by the application of heat, reducing the pressure upon the vapors and gases and the liquid separated in the distillation treatment by discharge through liquid columns whereby a pressure reduction corresponding to the hydrostatic head of the columns is effected, and then passing the liquid from the distillation treatment in countercurrent flow and in direct contact with the distilled vapors and gases under a pressure lower than that prevailing in the distillation treatment.

1,649,345. Method of and Apparatus for Making Gasoline. Forrest E. Gilmore, Los Angeles, Calif., assignor, by direct and mesne assignments, of one-sixth to Frank Ahlburg, Los Angeles, Calif., and one-sixth to William K. White, San Francisco, Calif. Filed August 5, 1924. Serial No. 730,197. 2 Claims. (Cl. 196—11.)



1. An apparatus for recovering gasoline from vapors containing the same comprising a chamber, means for introducing the vapors into the chamber adjacent the bottom, an accumulator tank connected into the top of said chamber, a compressor and a condenser interposed in the connection bewteen the tank and chamber, means for conveying condensate from the accumulator tank into the chamber adjacent the top, a valve controlled residue-gas discharge pipe connected into said accumulator tank, means responsive to the temperature in said chamber for controlling said discharge-pipe valve, baffling elements in said chamber over which the condensate flows in contact with the ascending vapors, and a back pressure valve interposed between the compressor and the chamber.

1,649,384. Process for Treating Cracked Hydrocarbon Distillation Products. Henry Blumenberg, Jr., Moapa, Nev. Filed February 14, 1927. Serial No. 168,236. Five claims. (Cl. 196—44.)

1. A process of decolorizing and deodorizing cracked gasoline comprising treating the cracked gasoline with aluminum chloro sulphate.

OIL TAXATION IN VENEZUELA; CONDITIONS OF CONCESSIONS

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 24.—Although hundreds of wells have been drilled and millions of dollars spent in exploitation work, there are but few companies that have production in Venezuela at the present time, states Halbert E. Watkins, United States commercial attache at Caracas, in a review of oil conditions as they are today in that most promising oil-producing country.

Mr. Watkins' comment shows that Venezuela, like other oil countries, meets the same hazard that is universal in the search for petroleum. He refers to five companies that have been successful in placing Venezuela in such a high position among the oil-producing countries of the world. However, he speaks of one company that alone is supposed to have spent $21,000,000 and another $7,000,000 without locating producing wells.

Mr. Watkins remarks that these immense sums spent in exploitation must be necessarily taken into consideration in estimating the cost of production and marketing. He says another factor is important in figuring cost in Venezuela, which is the fact that oil material and drilling machinery must be imported and that large stocks of supplies of all kinds must be kept on hand.

In Venezuela all rights to minerals and oil are vested in the federal government. The title to land covers the surface only. This dates back to days of the Spanish exploitation when all minerals were considered property of the Crown.

Generally speaking, the taxes exacted under the present law of 1925 are somewhat higher than taxes fixed by previous laws. With the exception of the companies operating under this law, charges on petroleum production in Venezuela depends entirely on the individual contracts which were let by the Venezuelan government for petroleum exploitation.

Law of Hydrocarbons

It is believed, says Mr. Watkins, that the great majority of existing petroleum contracts have either been adopted to or let under the present law of hydrocarbons which was enacted in 1925. Referring to the principal companies, he says, they are operating under the code of mines of 1910 which provides taxation as follows:

For every hectare of ground occupied by mining claims, 1 bolivar per annum. (Bolivar normal value 19.3 cents American; value October 15, 1927, 19.2 cents.) Two bolivars per metric ton for all petroleum that is exploited.

In addition to these two taxes, one petroleum company also has to make good to the government of Venezuela for every mining claim, independent of its size, a minimum exploitation tax up to 1,000 bolivars per annum.

Four companies, if they export from Maracaibo, are also obliged to pay a tax known as "derecho de boya," amounting to 1 bolivar per registered ton of the shipping employed.

Consumption Tax

One company, on products exploited and sold in Venezuela, is obliged to pay to the Venezuelan government a consumption tax equal to one-half of what these products should have produced had they been imported. The other four companies are subject to no such tax.

Since 1920 this consumption tax has been provided by the laws of hydrocarbons and applies to all companies working in Venezuela under any of these laws.

By virtue of special agreement entered into with the Venezuelan Government, two companies are obliged to make preliminary selection of areas that they desire for future exploitation. On all such areas, one company, between February, 1926, and February, 1931, will be obliged to pay the government of Venezuela 20 centimes of a bolivar per hectare. One company will be obliged to pay the government of Venezuela on preliminarily selected areas, the same tax from April, 1928, to April, 1933; thereafter both companies pay the regular annual surface taxes of 1 bolivar per hectare for all exploited area required by them.

Another company pays royalties varying from 7½ per cent to 11¼ per cent on account of having secured concessions which were granted prior to the enactment of the law of 1925.

Among the oil companies now operating in Venezuela successfully are the Lago Petroleum Corp., the Venezuelan Oil Concessions, Ltd., South American Gulf Oil Co., Caribbean Petroleum Co., and British Controlled Oilfields, Ltd., and Colon Development Co., Ltd.

Taxation of Oil Companies

Pertinent information relating to the taxation of oil companies in Venezuela is given in the following carefully prepared questionnaire:

What tax, if any, is encountered in Venezuela during periods of exploration of prospective oil fields?

(a) The concessionaires will pay to the government a tax of 10 centimes of a bolivar, or 2 cents United States currency, per hectare of land included in the claim upon filing the plan of exploitation. Upon claims covered by water, this tax will be paid only upon the area selected by the concessionaires for development. One-half of each claim being reserved for the government.

(b) Upon each parcel mapped regardless of area a tax of 70 bolivars will be paid and upon all the plan of all the parcels taken together a tax of 100 bolivars will be paid.

(c) The concessionaires will also pay an initial eexploitation tax of 2 bolivars per hectare upon the land selected for development. When the land selected is under water, this tax will be reduced by one-half.

What, if any, rental charges on land explored are incurred during this period of exploration?

During the first three years of the period of exploration a tax of 2 bolivars per hectare is levied. During the succeeding 27 years the tax is 4 bolivars per hectare and for the remaining 10 years 5 bolivars per hectare. These taxes are payable quarterly. The life of a concession is 40 years.

To what extent does exploration and eventual production of oil, if found, take place on privately owned land and on government-owned land?

The rights to all minerals and oils are vested in the federal government, regardless of whether found on land owned by the government or privately owned. The title to land covers the surface only and carries no rights whatever to deposits beneath the surface.

Taxes on Production

What taxation, if any, applies to the actual production of oil?

If production is encountered, a tax of 10 per cent of the market value of the oil produced is levied, payable monthly. This tax is based upon the value of bunker C oil at New York and cannot be less than 2 bolivars per metric ton. On concessions under water, this tax is reduced by one-quarter, but shall not be less than 1½ bolivars per metric ton.

No taxation in the nature of a corporation tax is imposed upon oil companies.

What taxes, if any, are levied upon the exportation of crude oil or its products?

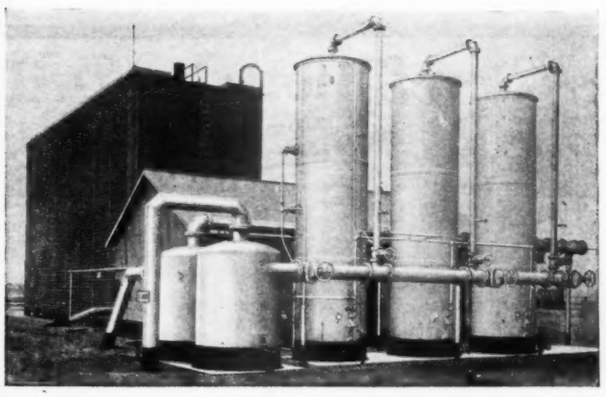
The manifest covering a shipment of oil or its products shall bear stamps to the value of 1 bolivar for each 1,000 bolivars of the value of the oil covered by the manifest.

A 5-bolivar "license for navigation" fee is charged each tanker navigating Lake Maracaibo.

Are there any other forms of taxation that apply to the oil before it is shipped?

A tax known as "berecho de boya" amounting to 1 bolivar per registered ton

(Continued on Page 286)



Getting the most gasoline out of gas

Thorough absorption of natural gasoline from gas requires intimate contact of gas and oil. Campbell Oil-Froth Absorbers guarantee the most intimate contact. Gas that passes through an Absorber without coming into actual contact with the oil cannot be absorbed. Channeling is impossible in Campbell Absorbers.

Our Catalog gives the proof.

J. A. Campbell
Consulting—Designing—Construction
Natural Gas Engineer
P. O. Box 669 LONG BEACH, CALIF.

CAMPBELL
OIL FROTH
absorber

A New Elliott Core Drill With Renewable Cutting Teeth

Following the same general design of our standard core drill, but having the distinct and exclusive advantage of *renewable teeth.*

New cutting teeth for this model will be supplied at such low cost that the old ones, when worn dull, can be discarded entirely, eliminating the necessity of buying a complete new head or building-up.

All teeth are forged and the wearing surfaces are coated with stellite to insure maximum wear. Special steels, heat treated, are used for all parts subjected to excessive strain or wear.

For particularly hard formations, cutting teeth are provided with insets of metallic oxides of extreme hardness. Teeth prepared in this manner will drill the hardest rocks encountered in rotary drilling at moderate cost.

Particularly adapted for use in localities remote from railroad transportation or where arc welding is not readily available.

ELLIOTT CORE DRILLING CO.
840 Subway Terminal Building
LOS ANGELES, CALIFORNIA

BRANCHES:
3210 Harrisburg Blvd., Houston, Texas
15 So. Madison St., Tulsa, Okla.
618 Lake Street, Shreveport, La.
432 Park Street, Beaumont, Texas

EXPORT OFFICE
150 Broadway, New York

ELLIOTT CORE DRILL

FUTURE VALUE OF PIPE LINES ASSURED

(Continued from Page 266)

pluses. In many instances the cash thus accumulated was invested in securities, and some of the companies still have a large part of these investments intact. In other instances the securities have partly been sold and the proceeds distributed to the stockholders in cash.

The lists of securities held by these companies are on file with the Interstate Commerce Commission. One who has had access to these lists in the last year has furnished the following figures showing actual market value of the stocks held, and the equivalent, per share of stock outstanding, of the companies concerned. In addition, the table gives certain operating figures, which are the general interest:

Company—	Cash & Investment Securities (Market value)	Per Share	Pipe Line Runs— 9 mos., 1927 (Bbls.)	Year, 1926 (Bbls.)
Buckeye Pipe Line	$5,270,000	$26.37	23,939,000	28,659,000
Cumberland Pipe Line	1,903,000	63.43	2,386,000	3,288,000
Eureka Pipe Line	2,476,000	49.52	7,841,000	9,014,000
Illinois Pipe Line	7,200,000	36.00	8,840,000	12,136,000
Indiana Pipe Line	5,740,000	57.40	20,423,000	25,304,000
National Transit	7,003,000	13.76	7,415,000	9,055,000
New York Transit	2,622,000	52.44	2,180,000	6,179,000
Northern Pipe Line	3,583,000	89.58	4,252,000	9,026,000
Prairie Pipe Line	45,141,000	55.73	48,564,000	50,668,000
Southern Pipe Line	2,249,000	22.49	2,753,000	1,755,000
Southwest Pa. Pipe Line	1,883,000	53.80	10,045,000	10,386,000

Company—	Depreciation— 1926	1925	Taxes— 1926	1925
Buckeye Pipe Line	$ 747,000	$ 740,000	$ 490,000	$ 293,000
Cumberland Pipe Line	190,000	190,000	67,000	82,000
Eureka Pipe Line	500,000	497,000	76,000	122,000
Illinois Pipe Line	1,577,000	1,514,000	836,000	740,000
Indiana Pipe Line	157,000	160,000	265,000	246,000
National Transit	367,000	367,000	17,000	27,000
New York Transit	128,000	130,000	168,000	175,000
Northern Pipe Line	87,000	85,000	68,000	51,000
Prairie Pipe Line	4,230,000	4,154,000	3,082,000	3,277,000
Southern Pipe Line	173,000	173,000	67,000	101,000
Southwest Pa Pipe Lines	166,000	167,000	21,000	24,000
Total	$8,322,000	$8,177,000	$5,157,000	$5,187,000

To Retain Eastern Lines

The course of business of some of the eastern lines has fallen off to an extent which renders the advisability of continuing them a question, according to some pipe line authorities. However, it is felt that in time, practically all existing lines will be found valuable, and there are many reasons for not ripping lines up if there is any future possibility of these being useful. In the first place these lines have valuable rights of way. In addition, the cost of ripping up the lines is almost equal to the selling price of the pipe after it is removed.

It is therefore believed that in most instances the lines will be continued until developments in the oil industry require their capacity use or enlargement.

Negotiations have been under way, it is understood, whereby some of the lines would be purchased by eastern refiners. In some fields companies of the system have purchased additional gathering lines, indicating the belief in the future of the system. Meanwhile, many of the pipe line companies in the eastern group have the ability, with their large liquid assets, to make any changes which would possibly perpetuate or increase their business, such as reversing the flow of oil through their lines.

Illinois and Prairie

The lines of the Illinois Pipe Line Co. and Prairie Pipe Line Co. have been expanding in recent years because the companies have operated in growing oil fields. The Prairie line covers the entire Mid-Continent oil field, and its lines have also been extended into the Texas Panhandle. The Illinois Pipe Line Co. has entered West Texas and probably will be a leading transportation unit in this district for the next 20 years or more.

There is no reason, in the opinion of pipe line authorities, why oil production should not be extended steadily westward through the northern and southern Rocky Mountain district. The Illinois Pipe Line Co. operates in Wyoming, and will probably extend its lines from West Texas into New Mexico, if production is extended in that direction. It is also possible that production may be brought in, all the way through New Mexico and Arizona into California, and that ultimately a trunk line system will connect the Southwest and Pacific Coast.

Pipe Lines in Emergency

It is considered absolutely essential that the principal inland refineries of the United States as well as those on the seaboard be connected by pipe line with the American fields. It is by no means certain that the movement of oil by water in oil tankers will always continue uninterrupted. In their pipe line connections with inland fields, coastal refineries have easy access to production in the event of interruption of ocean traffic or interference with foreign production.

INCREASE IN GASOLINE DEMAND VARIES IN U. S.

(Continued from Page 252)

states with decreases were Missouri, 1.2 per cent; Arkansas, 1.4 per cent and Montana 2.8 per cent. The largest percentage increase was in Connecticut, which was 26.4 per cent. This state was followed by New Mexico, 22.7 per cent; Iowa, 20.7 per cent; Maine, 20.5 per cent, and Oklahoma, 18.8 per cent.

October Report

The October report of the American Petroleum Institute, which is not included in the compilation of the Western Petroleum Refiners Association, shows that gasoline consumption during that month was 20.4 per cent greater than in the same month in 1926. This is the largest monthly increase shown this year. The October consumption, however, was 8.1 per cent less than the preceding month of September.

The following table gives the gasoline consumption by states:

Gasoline Consumption by States, October, 1927

	Gallons— Oct. 1927	Oct., 1926
Alabama	14,091,000	11,450,000
Arizona	4,283,000	2,896,000
Arkansas	7,969,000	9,613,000
Colorado	10,844,000	9,938,000
Delaware	2,089,000	2,407,000
Florida	17,289,000	22,322,000
Georgia	18,082,000	15,151,000
Idaho	4,560,000	3,745,000
Indiana	34,673,000	29,259,000
Iowa	20,842,000	23,722,000
Kansas	23,061,000	18,685,000
Kentucky	11,745,000	9,269,000
Louisiana	14,001,000	13,297,000
Maine	8,087,000	7,104,000
Michigan	95,424,000	50,037,000
Minnesota	27,515,000	25,612,000
Mississippi	11,203,000	10,157,000
Nebraska	15,449,000	14,015,000
Nevada	1,122,000	1,009,000
New Hampshire	4,577,000	3,945,000
New Mexico	2,980,000	2,319,000
North Carolina	21,834,000	18,220,000
North Dakota	11,119,000	7,869,000
Ohio	71,282,000	60,567,000
Oklahoma	22,032,000	19,686,000
Oregon	11,944,000	10,258,000
Rhode Island	5,367,000	4,891,000
South Carolina	9,627,000	7,895,000
South Dakota	8,448,000	7,343,000
Texas	53,660,000	45,729,000
Utah	4,352,000	3,187,000
Virginia	15,703,000	12,848,000
Washington	17,920,000	16,133,000
Wisconsin	30,790,000	26,712,000
Wyoming	2,437,000	2,133,000
Total	636,401,000	528,423,000
Daily average	20,529,000	17,046,000
Increase over previous year:		
Amount	107,978,000	.....
Percentage	20.4%	12.9%
New Jersey	20,178,000	.....

$4,000 PER ACRE FOR LEASE

BRADFORD, Pa., Dec. 24.—Sloan & Zook, oil producers of this city, have purchased the Joseph Boucher oil lease at State Line consisting of 100 acres and having a production of 60 bbls. daily. It is understood the purchase price was $400,000.

VAPOR PHASE CRACKING IMPORTANT AS ADJUNCT TO EXISTING METHODS

By Luis de Florez

It has become customary to classify cracking processes into two general categories—liquid phase, in which, as the name implies, the materials undergoing treatment are maintained in the liquid state; and vapor phase, where the materials are vaporized before cracking is effected. Actually the line of demarcation between these types of processes cannot be drawn sharply and the usual concepts are true only for extreme operating conditions.

In many existing cracking units operated at temperatures around 900 degrees Fahrenheit and below 300 pounds pressure, a very appreciable amount of vaporization and cracking can be observed in the heating tubes and, although these plants are commonly termed liquid phase, they are really processing oil under intermediate conditions and cracking actually occurs simultaneously in both the liquid and the vapor.

The relationship of temperature and pressure to the stock processed obviously determines the physical state of the oil while undergoing treatment. Thus for a given temperature, the essential difference in the practice of the respective methods of cracking lies in the magnitude of the pressure applied during the operation, since this factor controls the extent to which vaporization may take place. The rapid increase in vapor pressure of oils with temperature, imposes a practical temperature limit on liquid phase cracking or even semiliquid phase cracking, and as a result operations of this character are carried out at temperatures well under 1,000 degrees Fahrenheit. In vapor phase cracking, where no attempt is made to maintain the materials under treatment in a liquid state, considerably higher temperatures may be used, permitting more rapid cracking and the production of a different character of product. In fact the operation can actually be practiced at temperatures as high as 1,400 degrees Fahrenheit at which toluol and benzol can readily be produced in substantial quantities.

Use of Pressure

The use of pressure to maintain materials in the liquid state has been resorted to in the past, as it was found that oils cracked more readily at lower temperatures in the liquid state, and that low temperature cracking resulted in the production of a more saturated gasoline and a minimum of noncondensible products. Operating at temperatures of the order of 1,000 degrees Fahrenheit, there no longer appears to be the same necessity for maintaining the material in a liquid state to accelerate cracking, and the character of the gasoline appears to change more with respect to the temperatures than the pressures employed, thus, although the application of pressure may somewhat reduce the formation of noncondensibles, it no longer serves the purpose originally intended.

The use of high temperatures with corresponding high pressures to maintain liquid conditions in cracking would multiply the mechanical problems and the usefulness of a process embodying these characteristics would seem doubtful unless unusual developments resulted. It appears probable therefore, that liquid phase cracking will continue to be practiced at comparatively low temperatures, and since no gain exists in operating vapor phase except at high temperatures, we certainly may expect operations of this character to be carried out at the higher ranges. Thus we might conceive of a practical division between liquid phase and vapor phase cracking as being made by the temperatures employed, and we would not be far wrong although somewhat inaccurate, in classifying the usual liquid phase processing as a cracking operation carried out below 950 degrees Fahrenheit, and vapor phase as that carried out above this temperature. We might even go so far as to characterize liquid phase cracking as low temperature cracking and vapor phase as high temperature cracking.

Economic Difference

The important economic difference between vapor phase and liquid phase cracking, as usually practiced, is found in the difference in the chemical structure of the gasoline produced by these different methods. Thus, in considering the commercial development of the vapor phase process in competition with established methods, we are concerned essentially with the desirability of producing the character of gasoline formed at high tempeatures, in which the paraffin hydrocarbon content is comparatively low, and in finding a means to accomplish this at a reasonable cost.

The original development of liquid phase cracking has been brought about by the desire to develop a process which would produce a gasoline resembling as closely as possible that obtained from normal distillation and effecting this with the least shrinkage of liquid products. This line of development has been the logical one, due to the fact that heretofore no commercial advantage existed in manufacturing a high temperature gasoline, and the only outlet for the gas produced in cracking lay in its utilization for plant fuel. Economic conditions which have influenced this development have changed, however; gasolines made under high temperatures have been found to possess marked antiknock properties which are becoming a requisite to modern motor fuel; and the expansion of the oil industry has developed many contacts with other fields which should facilitate the disposal of noncondensible products for purposes other than fuel. It is necessary, therefore, to consider high temperature or vapor phase cracking in the light of new circumstances which have materially altered the outlook, and to readjust our ideas accordingly.

The adaptation of vapor phase cracking, like that of any other industrial process, has an economic and a mechanical aspect, and its eventual adoption on a large scale can come about only after the problems involved have been solved jointly.

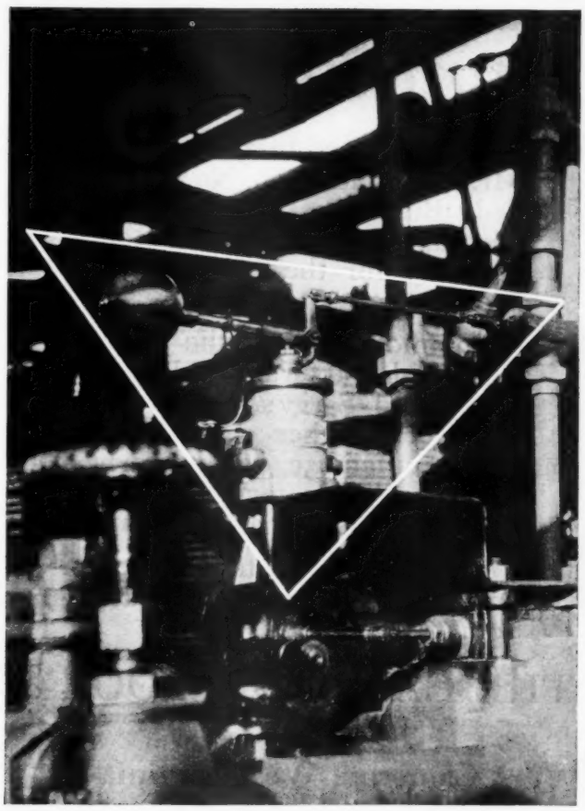
It is the object of this paper to discuss some aspects of these problems in the hope that it may lead to a clearer understanding of the situation, and help stimulate commercial development which appears to offer a good deal of promise and which, in the past, has been somewhat a victim of circumstances.

Early Experiments

As we look back over the vast amount of experimental work which has been done on the conversion of high-boiling hydrocarbons into products having a gasoline boiling range, it is apparent that most of the early experiments were done under vapor phase conditions where pressures were comparatively low and temperatured high. We can well realize that the imagination of early experimenters was captivated by the rapid cracking which takes place under vapor phase conditions; at temperatures of 1,000 degrees to 1,200 degrees Fahrenheit the reaction is almost instantaneous and results in a comparatively high yield of gasoline without the necssity of recycling. Many early experimenters must have been led to hope for better results from operations of this character than from the slower and more difficult liquid phase methods, apparently involving much greater mechanical difficulties due to the high pressures required.

In this respect, I can speak from experience. I began experimental work in cracking some 15 years ago and remember distinctly comparing the results of cracking vapor in a tubular apparatus, at temperatures of about 1,100 degrees Fahrenheit with the results obtained by cracking oil in a small steam boiler, operated at between 60 pounds and 70 pounds pressure. In one pass through the vapor phase apparatus I could ob-

*Before American Petroleum Institute, Chicago.



Mason No. 1 Duplex Speed Governor, Santa Fe Springs, California.

Mason Steam Pump Speed Governor

This governor is to the direct acting steam pump what the ordinary ball governor is to the steam engine.

It controls a balanced valve placed in the steam line, exactly regulating the amount of steam to the requirements of the pump and automatically maintaining a uniform speed, regardless of any variation of steam or load.

By the use of a key, the speed of the pump can be changed, if desired, while the pump is in motion.

Our nearest jobber will be glad to give you complete information on this and other Mason Regulators used in the oil industry,—or we shall be glad to have you write to us direct.

Have you a copy of Catalog No. 62?

Mason Regulators

MASON REGULATOR CO.
Boston, Mass.

Muskogee, Oklahoma — Atlas Supply Company
Los Angeles, California — Warren & Bailey Company
Houston, Texas — J. A. Rossiter Company

1526

Announcement

We are pleased to announce that Mr. F. T. Patterson, No. 416 Kennedy Building, Tulsa, Okla., has been appointed our Sales Representatlve for the Mid-Continent Field.

A complete stock of the Monroe "Talon" Rope Grabs and Spears, Mon-Rol-Shivs, Ideal Mast Heads and other specialties of our manufacture, will be carried in stock at Tulsa, for quick service to our Mid-Continent customers.

Your inquiries to the above address will receive prompt attention.

THE CAMERON TOOL & SUPPLY CO.

Cameron, West Virginia

"Use the Better Tool First"

PETROL
ANNOUNCING
Our New Oil Field Affiliations for
PETROL PRODUCTS
PETROL and VICTOR BALATA DRILLING BELTS
PETROL and VICTOR BALATA PUMPING BELTS
PETROL IMPROVED BELT CLAMPS
PETROL BELT PUNCHES
and
OTHER PETROL SPECIALTIES
Thru
THE JARECKI MFG. CO.
NORTHERN TEXAS OKLAHOMA KANSAS PENNSYLVANIA and OHIO
AND
THE PETROLEUM SUPPLY CO.
LOUISIANA, ARKANSAS and GULF COAST
Large and complete stocks carried at all distributing points for immediate shipment
MANUFACTURERS
VICTOR BALATA & TEXTILE BELTING CO.
EASTON, PA. NEW YORK, N. Y. CHICAGO, ILL.
"OLD FAITHFUL"

tain yields as high as 30 per cent, whereas I obtained conversion of only 3 per cent to 5 per cent in the liquid phase apparatus due to employing temperatures limited by pressures. I cannot say that I considered these results conclusive; my employer, however, did; and we bent our efforts toward the development of vapor phase, which has been a constant source of interest to me ever since.

Antiknock Fuels

Liquid phase cracking proved itself better suited to the then existing conditions of the refining industry, since a larger portion of the products obtained could be handled in the usual channels while the demand for antiknock fuels, which we expected to develop rapidly, did not materialize for many years. As far back as 1913 we made tests with vapor phase fuel in motors of fairly high compression which were then operated on "Shell" and "Pratt" "No. 1." and obtained excellent results. The subsequent commercial development of motors, however, tended toward standardizing on lower compression ratios and our work, in the light of present knowledge, turned out to be premature. Without the demand for this type of product and without facilities for the disposal of gas, the time was not ripe for the commercialization of vapor phase cracking.

In recent years, vapor phase cracking has not appeared in a very favorable light, due in no small measure, to the fact that many semitechnical men discovered time and again that oil could be cracked rapidly under vapor phase conditions. This resulted in the promotion of many unsound processes and in expensive attempts to use them without realizing their limitations and the fact that, even if mechanically perfected, they would have to compete with established and efficent liquid phase plants without provisions to overcome their shortcomings or capitalize their advantages. Lack of technical knowledge and disregard for economic conditions have been the cause of repeated failures which have given the impression that vapor phase cracking was little short of a commercial impossibility.

Pyrogenic Cracking

In all forms of pyrogenic cracking, noncondensible gases are formed and by nature the gasoline made requires special and sometimes drastic treatment to meet present-day specifications. These inherent characteristics are intensified in vapor phase cracking and have been stressed as basic disadvantages as compared with other forms of cracking. A high yield of noncondensible gas can be called a disadvantage, however, only as long as this gas is accounted of little value; and similarly the production of gasoline containing a high proportion of compounds requiring special treatment, can be considered a disadvantage only if it has no commensurate advantages over the usual product. As a matter of fact, if a reasonable price could be obtained for noncondensible gas, and a useful function served by most of the offensive compounds, these defects would disappear.

The noncondensible gas produced by vapor phase cracking has a very high heat value as well as illuminating properties and is similar in almost all respects to the gas that is produced in retorts by gas companies to enrich water gas. It is conceivable, therefore, without much imagination, that gas companies would be willing to buy this gas from the oil companies at a reasonable cost, instead of purchasing gas oil which they, in turn, must process at considerable expense and plant investment, to serve the same purpose.

Sale of Gas

It is further conceivable that refineries, which are situated within reasonable proxmity to large centers of population, could afford to operate vapor phase plants, selling the gas as one of the resulting products to public utility companies, and actually make it a source of revenue. Possibly some desultory attempts have been made to work out arrangements of this character, but if only a portion of the effort which has been devoted to the sale of refined oil had been put on the sale of gaseous products, a ready market would doubtless exist for them today. Heretofore there has been little necessity to consider this problem seriously due to the comparatively small amount of gas formed in existing liquid phase plants and it is only natural that development should await the necessity. The only apparent obstacle to the profitable sale of gas appears to be the necessity of creating a true realization of its value.

The success of a vapor phase operation does not depend primarily upon the reduction of the yield of gas beyond a certain point but upon its disposal at a reasonable profit. A high yield of gas affects the operation unfavorably only when it reduces the gasoline capacity, which may be the case in an inefficient plant where the ratio of gas to gasoline is excessive. A rough figure for gas production can be taken as 100 cubic feet per gallon shrinkage of liquid products and its cost computed on this basis. It is probable that even if sold on a "break even" figure with charging stock, the cost of operating a vapor phase plant would be very reasonable, since the rapid cracking which takes place at high temperatures will make it possible to process oil with less investment per unit capacity than with other methods of cracking.

Manufacture of Solvents

Another outlet for vapor phase gas may lie in its use in the manufacture of solvents. It is possible to make alcohols and kindred solvents by sulphation of still gases and much work has already been done in this field. The yield of solvents from still gases is largely dependent on the extent of their unsaturation and the vapor phase gases, which are very much more unsaturated than ordinary still gases or those obtained from liquid phase cracking, constitute a better raw material since the volume of gases processed is less per unit of solvent produced. The increase in demand for lacquer and paint solvents indicates possibilites for these products and, although their market is comparatively limited, some amount of vapor phase gas can be profitably absorbed in their manufacture. This outlet might be utilized where the sale of gas is not possible, due to the location of the plant.

The distillate produced by vapor phase cracking has a very distinct advantage over straightrun product and liquid phase gasoline in that it has very marked antidetonating properties. It presents a somewhat more difficult problem in refining but the growing demand for antiknock fuels distinctly warrants some additional effort to produce a fuel which has these valued properties. Most antiknock gasolines are being sold at a premium today, presumably to defray the additional expense in manufacture. A fraction of the average premium would be sufficient to pay for the additional cost which might be entailed in refining vapor phase material. The refining, which may appear to be difficult in the light of present knowledge, will inevitably improve from time to time if it becomes a daily operation, bringing about economies which will offset lower sales return, if the time comes when premiums are no longer in existence.

At one time refiners condemned cracked gasoline as being a source of trouble and not to be compared in value with straightrun products; today, properly refined cracked gasolines are preferred, due to the fact that they have some antiknock properties, and their treatment is taken as a matter of course. There is every reason to expect the same evolution of opinion and of practice for vapor phase products.

Economic Aspects

In summarizing the economic aspects it may be said that vapor phase and liquid phase cracking are not directly comparable since they produce different types of products. Vapor phase cracking is capable of producing a highly antiknock fuel and in so doing produces a larger proportion of fixed gases than liquid phase and a commercial outlet must be found for this gas to make the operation profitable. An outlet exists in its use in the gas industry where it may replace the use of gas oil for enriching.

This substitution would result in economies both to the refiner and the gas companies by the fact that the gasification and cracking can be carried out in one operation permitting an overall reduction of fixed charges and operating expenses and yielding liquid products which can be handled in the usual refinery channels and entirely gaseous products for the gas industry. This arrangement can be effected by choice of location for vapor phase plants and where this is not possible a secondary outlet may be found in the use of gas for the manufacture of solvents. It is not to be expected that vapor phase cracking will supersede liquid phase, but it has a distinct function in supplementing existing operations to enhance the production of antiknock fuel by furnishing a blending stock.

Mechanical Aspect

The mechanical aspect of the vapor phase problem leads us first into a comparison of the general type of plant required for liquid and vapor phase cracking. The success of the liquid phase cracking plant has been made possible only by the application of comparatively high pressures and provisions made for allowing a substantial time for the reaction to take place. It is necessary, therefore, to resort to heavy construction to handle high pressures and to employ reaction chambers or soaking zones which may be dispensed with or at least can be greatly reduced in size when high temperatures are employed, such as are possible in vapor phase plants. Thus, the liquid phase plant necessarily involves more weight of equipment for a given capacity and in general involves more operating hazards. The operation of a vapor phase plant, on the other hand, being carried out at higher temperatures, makes the heating elements more subject to deterioration and the performance of the plant more dependent on accuracy of control. With proper design, however, these features can be satisfactorily handled.

Heat Transfer

The chief problem to be contended with is that of efficient heat transfer. The heating of gaseous material is not as simple as would appear at first glance, since vapor at comparatively low pressures is far more tenuous than liquid and a poor conductor of heat. It is not sufficient to have a uniformly heated furnace, but some provision must be made for bringing most of the particles of vapor at some time in direct contact with the heating surfaces, at the same time avoiding overheating, which will cause an excessive production of noncondensibles in comparison to the gasoline yield.

It is my opinion that the only method to accomplish this is to pass the gases through comparatively small tubes at very high velocity, and to impart heat to them while flowing in a highly turbulent stream. It is possible to obtain a yield of approximately 30 per cent in one pass, together with a production of noncondensibles of between 12 and 15 per cent, by utilizing this method of heating. If the operation is carried out in a large tube where the velocity is comparatively small, the yield of gasoline may drop to between 15 and 20 per cent and the production of noncondensibles may be even higher than that mentioned above. In any large tube in which the gases travel with insufficient velocity, in order to heat the gases to a given average temperature, it is necessary for the walls of the tube to be at a temperature considerably in excess of that to which it is desired to heat the gases themselves; consequently there is a tendency for the vapors which travel along the inner surface of the tube to become overheated and crack too violently, whereas some of the vapors passing through the center of the tube go through comparatively untouched. The use of filling or cores in tubes does not appear to be practical for best results. They present numerous passages of uncertain section in parallel and if coke or carbon becomes deposited on the cores, there results an uneven flow through the tube with consequent uneven heating and still more uneven cracking. The mechanical failure of at least three large plants, which I have seen, was due primarily to this reason.

Since the reaction at high temperatures is extremely rapid, a slight difference in temperature will have a very marked effect on the cracking and if temperature is not maintained accurately at the right point there will be periods of overproduction of gas and underproduction of gasoline and the average figures obtained will show a comparatively low yield of gasoline and a high yield of gas. It will also affect the product, increase the subsequent treating problems and lead to coking difficulties. Variations of vapor temperatures will take place very rapidly and comparatively slight fluctuations will reduce the yields as much as 4 or 5 per cent from the maximum. It appears practically impossible to accomplish close regulation by hand and automatic temperature control appears essential for economical operation. Equal care must be taken to maintain a constant flow of oil through the system. It is possible, however, to effect this by hand control although automatic devices for the purpose would be advantageous.

Up to the present no metal of reasonable cost has been available, for the tubes, which would not be oxidized at temperatures of over 1,000 degrees Fahrenheit; consequently, until some suitable metal becomes available, a fairly rapid deterioration of tubes must be expected and allowed for in the operating expense of a plant. Not only is the replacement of tubes expensive, but more serious is the fact that a unit with its accessories must be shut down while replacements are being made. This fact influences the design of the plant to the extent that it should be possible to replace the tubes quickly and the cost of the tubes should be as low as possible, commensurate with their life and service

New Type Furnace

These considerations led to the design of a type furnace which was first built in England in 1913-14 and operated at temperatures between 1,300 degrees and 1,400 degrees Fahrenheit for the manufacture of aromatics. Similar furnaces have been built in several plants since that time, a good example of which is embodied in the design of the plant built for New England Oil Refining Co. at Fall River, Mass.

The furnace comprises a vertical shaft divided by a cross wall in which the tubes are suspended vertically. The firing is effected in a Dutch oven and the products of combustion, passing over the bridge wall, heat the tubes in both sections then pass out to the stack. The tubes, which are capable of being removed from the top and handled from an operating platform, consist of Shelby seamless tubing, 1-inch inside diameter, bent in the shape of a hairpin and connected in series at the top by means of a short return bend with union connections between. Disposing the tubes vertically appears to be of material advantage particularly when operating at higher temperatures, as sagging and expansion troubles are overcome.

This unit had a capacity of about 125 bbls. per day throughput and the plant, which comprised eight such units, had a maximum capacity of about 1,000 bbls. per day. A tube could be removed either for cleaning or repairs in about three minutes; thus the idle time for the plant was considerably reduced. In fact, for a period of months, it operated at an average capacity of about 830 bbls. per day or with 17 per cent idle time, which included shut downs for all purposes. The yield obtained from this plant in one pass varied in accordance with the quality of the charging stock from about 23 per cent gasoline, cut at 410, on a high sulphur Mexican distillate, to about 30 per cent on a Mid-Continent distillate.

Operating Costs

The operating costs of running at full capacity were approximately 25 cents per barrel charge, which did not include treating and steam stilling of the gasoline. The cost of treating and rerunning ran around 20 cents per barrel.

PATRICK CARBON
for Diamond Core Drilling

"Specify Patrick Carbon"

LET this organization be a part of your own.

Patrick co-operation in selecting and grading carbon for any drilling need, is always dependable.

SEND FOR BOOKLET

You can get in touch with our representative by wiring Duluth office

R. S. PATRICK
Duluth, Minnesota, U.S.A.
Cable Address, "Exploring" Duluth

OTHER "PENBERTHY" PRODUCTS

Ejectors
Cellar Drainers
Oil Gages
Water Gages
Oil Cups
Grease Cups, Etc.

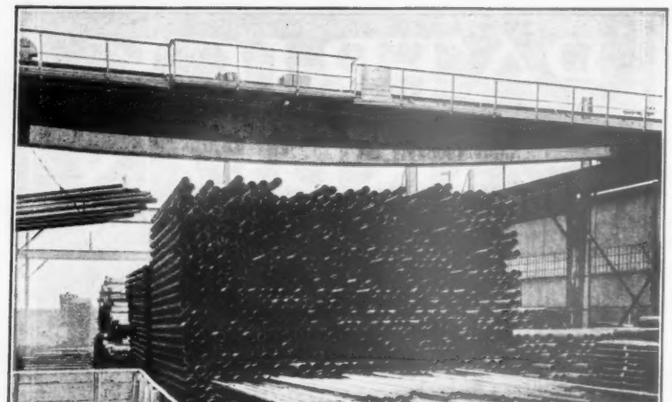
PENBERTHY PRODUCTS

Special High Pressure Automatic Injector

Write For Catalog

Owing to the increasing demand in the oil fields for injectors to operate on higher pressures, this high pressure injector is recommended where boilers are operated at pressures to 200 pounds.

PENBERTHY INJECTOR COMPANY
Established 1886
Canadian Factory: WINDSOR, ONT., CAN.
1260 Holden Ave., DETROIT, MICH.



SOLD! Loaded and Shipped in 36 Hours After Receipt of Order

That's an example of Greenspon service—these 14 miles of ODEE pipe went out in record time. Do you know ODEE Pipe?

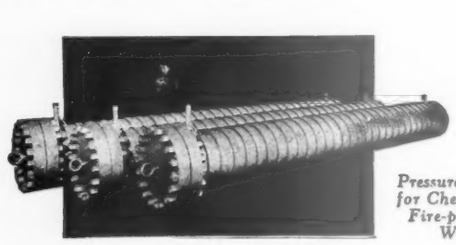
Absolutely new, high-quality grade—in single lengths or "bull-dog" welded into double lengths. ODEE pipe is ready to save you 50% of your field welding. We have ODEE double-joint pipe in all sizes for gas lines, at startlingly low prices. Immediate shipment can be made. Write, wire or 'phone for quotations. With a suitable down payment, your line can be financed out of income.

ODEE PIPE FOR GAS LINES

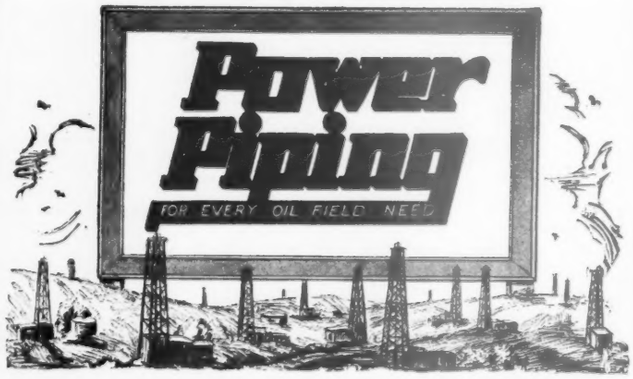
Jos. GREENSPON'S Sons
Iron & Steel Company
General Office: St. Louis. *Branch Office:* Tulsa, Okla.

Helpful Engineering Service

In many plants special problems arise that demand individual equipment to meet conditions exactingly. It is the duty of our engineering staff to determine or to develop equipment that will serve the particular purpose! Write.



Pressure Vessels for Chemically Fire-proofing Wood



POWER PIPING CO. • PITTSBURGH

material treated. This plant was a comparatively small unit and operating in direct competition with straightrun product, but it paid for itself in less than five months in spite of the fact that the gas was used as fuel and the gasoline sold as straightrun. This shows clearly that this type of operation, under favorable conditions, has possibilities. The plant was built in 1922 at a cost of about $50,000 and it is still being operated at periods when gasoline prices permit. The longest run made on these units was 17 days without shutdown and the average run seven days, one unit being used as a spare and each one being shut down for one day during the week.

The units built at a later date for the Petroleum Chemical Co. were similar to these and operated on a 30 day cycle, the longest run being 47 days.

There is, of course, a factor which enters into all vapor phase cracking; that is, that the stock charged to the tubes must be an overhead distillate since it must be completely vaporized and would leave a sediment in the vaporizing space if it contained carbon or dirt; or else some provision must be made to vaporize the charging stock and supply vapors to the tubes Generally speaking, the latter procedure is undesirable since the vaporizing still would have to be operated under high pressure to give sufficient velocity to the gases to give turbulent flow and prevent the deposition of carbon. Separating chambers may be used where the oil is heated and the bottoms taken out in a suitable manner, but the difficulty with this scheme is that a more or less indeterminate quantity of vapor enters the tubes and the fluctuations in velocity which ensue are a distinct detriment to the operation. Up to the present the simplest method for obtaining the most efficient cracking seems to be to charge an overhead stock, in the liquid state, to a series coil where it is vaporized and cracked. This method can be elaborated to make available heat economies without losing accuracy of control.

Coke

With the proper control of temperature and high velocities there is practically no coke formed in the tubes and for that matter very little coke is formed in any portion of the plant. The total product of a vapor phase operation carried out on light gas oils, including the bottoms, is usually translucent. Upon distillation of this product both the naphtha and recycle stock have a very distinct yellow cast and a peculiar smell which is not unlike the odor of distillate taken out in wax presses. When the naphtha is treated with acid it turns to a deep wine color and it must be redistilled to obtain the white product. The treatment of the distillate can be successfully accomplished with acid or, in the vapor state with fullers earth. The losses entailed in treating by present known methods are higher than with liquid phase cracked gasoline and the gum substances are usually present in larger quantities. It is also more difficult to make the finished gasoline stable and it is an advantage to blend it immediately with some straightrun product although it can be refined and made stable by itself.

The gasoline produced from the New England Oil Refining Co. plant was tested at the Massachusetts Institute of Technology in block engines, and road tests were made which showed that it was an excellent fuel, and by itself could hardly be made to knock. At the time these tests were made there were, of course, no provisions available to determine antiknock properties as we know them today but results indicated that blends of 30 or 40 per cent vapor phase gasoline with straightrun would give a gasoline equivalent to many of the antiknock gasolines sold today. Since then these results have been confirmed with various knock indicators and show that a good vapor phase product, when blended with ordinary gasoline, is about as effective as benzol and sometimes more so; also that its antidetonating properties are varied by the conditions under which it is produced and method of treating employed.

Yields of gasoline by vapor phase cracking are higher with the light charging stocks, and distillates, which are considered too refractory for liquid phase cracking or which have to be treated at extremely high pressures, can be readily handled in the vapor phase plant. Pressure distillate bottoms, for instance, make an excellent charging stock and a combination of liquid and vapor phase cracking would permit both types of processes to be run on the stock to which they are most suited and jointly produce a motor fuel of superior quality. A proportion of two to one for liquid and vapor phase capacity would appear to be about right.

Fuel Consumption

The fuel consumption of units of the character described is about 10 per cent of the total charge when no provision is made to recover heat and a reduction of this may be expected if heat exchange is resorted to.

The use of steam in vapor phase cracking does not appear to be advantageous since it increases the fuel requirements and in some instances gives trouble in the recovery of distillates due to formation of emulsions It has, apparently, been resorted to in some cases to prevent overheating but is not necessary in a properly designed plant.

Countless attempts have been made in the past to develop catalysts to facilitate the cracking of oil, with little success and, with the exception of aluminum chloride, there appears to be no substance commercially available at the present which has an appreciable effect on the conversion of petroleum oils. Vapor phase processes have received more than their share of attention in this respect and have, in many instances, been identified with developments of this character. Recently some plants have been built in which it is claimed that the operation is benefited by catalytic action. Personally I have not seen any results which could not at least be equaled by an accurately controlled plant where heat alone is employed to carry out the reaction.

It must, of course, be borne in mind that vapor phase, like other forms of cracking, has been covered by numerous patents which must receive consideration. It is to be hoped, however, that the work which they represent may be made available to the industry, and that a just appreciation and return will be accorded to those who have sponsored successful development. Thus only may we foster progress.

Cracking at high temperatures in the vapor phase has many things in its favor and if considered as an adjunct to existing commercial methods and utilized with discretion it will be a marked contribution to the industry.

WITHOUT NEED OF LAW

A striking illustration of what may be accomplished in the absence of legislated rules but as a result of pure economic law may be found in the development of the natural gasoline business. It was only a few years ago when the extraction of gasoline from casinghead and natural gas was unheard of. Research established the fact that the liquid was contained in and could be taken from the vapor, and that the extraction could be made by compression or absorption.

Now, when this was ascertained it would have been logical if law makers had occupied themselves in the passage of statutes prohibiting the burning of gas in its raw state or until after the gasoline had been extracted, provided the content was sufficient to warrant the expense of extraction. But nothing of the kind was done, and so far as I know there is not a law on any statute book dealing with this matter. Yet no quantity of gasoline to speak of is being wasted through the burning of gas for fuel and illumination. The industry as a straight economic measure has seen to it that gasoline plants were installed and that the extraction took place.—Amos L. Beaty.

NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE FIRST REPORTS

Gray County

Danciger Oil & Refining Co. and others' No. 8 W. Jackson, 330 feet south and west of the NE cor. NW, Section 88, Block B-2, H. & G. N. Survey. Operators Oil Co.'s No. 2 W. Jackson, 330 feet south and east of the NW cor. NE, Section 88, Block B-2, H. & G. N. Survey. The Texas Company's No. 4 J. B. Bowers, 330 feet north and west of the SE cor., Section 93, Block B-2, H. & G. N. Survey. Same company's No. 2 H. M. Davis, 330 feet north and east of the SW cor. NW, Section 86, Block 3, I. & G. N. Survey. Same company's No. 1 S. W. McLarty and others, 330 feet north and east of the SW cor. of the E half of the NW, Section 1, Block 1, A. C. H. & B. Survey.

Hutchinson County

Holmes & Quinn's No. 1 J. K. Quinn, 330 feet north and east of the SW cor., Section 9, Block 3, B. S. & F. Survey.

Potter County

Prairie Oil & Gas Co.'s No. 2 Lee Bivins, 660 feet north and 330 feet west of the SE cor., Section 39, Block M-20, G. & M. Survey.

Randall County

Westbrook Oil Co.'s No. 1 J. Beckman, 330 feet north and east of the SW cor. SE NE, Section 46, Block B-5, H. & G. N. Survey.

NORTH CENTRAL AND WEST TEXAS FIRST REPORTS

Archer County

Consolidated Oil Co. and Simms Oil Co.'s No. 4 J. H. Turbeville, 150 feet south and east of the NW cor. SW, Section 141, Robert Carson Survey, A-98. J. P. Rayzor and others' No. 1 J. F. Ebnother, midway east and west and 150 feet south of the north line of Section 102, Club Ranch Subdivision. Panhandle Refining Co.'s No. 1 J. R. Garvey, 450 feet south and 150 feet east of the NW cor. SE, Section 1,856, T. E. & L. Survey. Panhandle Refining Co. and others' No. 1 H. E. Porter, 150 feet south and 1,104 feet east of the NW cor. of the A. Balle Survey, A-25. Robert Oil Corp.'s No. 4 J. R. Garvey, 2,100 feet north and 1,950 feet west of the SE cor., Section 1,802, T. E. & L. Survey. F. P. Rose and others, No. 1 E. H. & J. E. Morrison, 150 feet south and west of the NE cor. SW, Section 1,576, T. E. & L. Survey.

The Texas Company's No. 1 L. C. Garvey-B, 150 feet south and east of the NW cor., Section 93, Jefferson County School Land, A-240. Same company's No. 1 J. Seay, 150 feet south and west of the NE cor. SW, Section 110, Club Ranch Subdivision.

Brown County

Cranfill & Reynolds' No. 1 E. DeBusk-B, 1,982 feet south and 4,550 feet west of the NE cor. of the Jose Padilla Survey No. 646, A-739. Phillips Petroleum Co.'s No. 10 C. Newsome, 150 feet south and 838 feet east of the NW cor. of the G. R. Davis Survey, A-2,106. Same company's No. 3 Mrs. T. S. Williams, 150 feet north and 1,530 feet east of the SW cor. of the John Beck Survey No. 792, A-47. E. L. Smith Oil Co.'s No. 1 Ralph Hines, 2,640 feet south and 1,650 feet east of the NW cor. of the John Ethridge Survey No. 647. Harold Stanley's No. 1 J. R. Lewis, 1,050 feet north and 1,200 feet east of the SW cor. of the J. R. Lewis 400-acre tract out of the James Kenney Survey No. 624. Inland Oil Co.'s No. 1 M. L. Cleveland, 200 feet northwest of the southeast line and 2,000 feet southwest of the northeast line of the Henry Kraber Survey No. 19, A-584.

Coleman County

Dallas Petroleum Co.'s No. 1 J. H. Babbington, 1,377 feet north and 698 feet west of the SE cor. of the W. L. Rose Survey No. 80, A-808.

Crane County

Humble Oil & Refining Co.'s No. 1 University Land-B, 2,310 feet south and 1,650 feet east of the NW cor., Section 35, Block 30, University Land. Independent Oil & Gas Co.'s No. 2 University Land-B, 2,310 feet south and 990 feet east of the NW cor., Section 35, Block 30, University Land.

Eastland County

Cisco-Falls Oil Co.'s No. 1 S. P. Rumph, 350 feet north and east of the SW cor. of the S. P. Rumph 135-acre tract out of the S. J. Robinson Survey. States Oil Corp.'s No. 6 Jim Harrell, 1,500 feet south and 930 feet east of the NW cor. SE, Section 6, Block 4, H. & T. C. Survey. Phillips Petroleum Co.'s No. 1 C. Pence, 330 feet south and east of the NW cor. of the E half of Section 2,981, T. E. & L. Survey.

Howard County

Magnolia Petroleum Co.'s No. 3 Dora Roberts, 1,650 feet south and 2,310 feet east of the NW cor., Section 157, Block 29, W. & N. W. Same company's No. 4 Dora Roberts, 330 feet south and east of the NW cor., Section 157, Block 29, W. & N. W. Survey. Same company's No. 5 Dora Roberts, 330 feet north and east of the SW cor., Section 136, Block 29, W. & N. W. Survey. Same company's No. 6 Dora Roberts, 2,440 feet north and east of the SW cor., Section 136, Block 29, W. & N. W. Survey. Texon Oil & Land Co. and Marland Oil Co.'s No. 2 W. R. Settles-A, 330 feet south and west of the NE cor., Section 158, Block 29, W. & N. W. Survey.

Jack County

Seaboard Oil & Gas Co. and others' No. 3 J. W. Cullers and others, 600 feet south and 200 feet west of the NE cor. of their 60-acre lease out of Section 4, S. P. R. R. Survey, A-2,188. Shaw & Rathke's No. 6 J. W. Cullers and others, 200 feet north and 1,115 feet west of the most easterly SE cor. of their 80-acre lease out of Section 4, S. P. R. R. Survey, A-2,188.

Lynn County

Hart Oil Corp.'s No. 1-A, C. O. Edwards, 330 feet north and 380 feet west of the SE cor., Section 5, Block 2, L. & S. V. Survey.

Montague County

Pure Oil Co.'s No. 2 Mrs. S. F. Loy and others, 4,397 feet north of the most southerly south line and 195 feet east of the west line of their 80-acre lease out of the S. F. Loy and others 210-acre tract out of the William Donoho Survey, A-178. Sigler and others' No. 4 J. W. Maddox, 150 feet north and 450 feet east of the SW cor. of the N half of Lot No. 14, S. H. Arnold Survey, A-5. Sigler & McGinley's No. 1 Mrs. A. B. Hinton, 70 feet south and 1,644 feet west of the NE cor. of the Alex Coats Survey, A-129, being 150 feet north and east of the SW cor. of their 9.7-acre lease. Same company's No. 1 Mrs. S. F. Loy and others, 500 feet north and 200 feet east of the most westerly SW cor. of the S. F. Loy and others 210-acre tract out of the William Donoho Survey, A-178. United Producers Co.'s No. 1 Sam Jackson, 807 feet northwest of the southeast line and 267 feet northeast of the southwest line of the L. Davis Survey, A-207.

Palo Pinto County

G. A. Clemments' No. 1 J. M. Brownfield, 1,500 feet south and 150 feet east of the NW cor. of the J. M. Brownfield 230-acre tract out of the Thomas Grubbs Survey, A-197.

Pecos County

Everett and others' No. 1 J. Fields and others, 330 feet north and west of the SE cor. of the north 280 acres of the A. Parker Survey No. 3, A-4,897, Block 206. Humble Oil & Refining Co.'s No. 1 J. H. Tippett, 1,650 feet north and 330 feet west of the SE cor., Section 40, Block 194, G. C. & S. F. Survey.

McMan Oil & Gas Co. and Marland Oil Co.'s No. 15 I. G. Yates, 275 feet south and 330 feet west of the SE cor., Section 103, Block 194, G. C. & S. F. Survey, and located in Section 34½. Same company's No. 16 I. G. Yates, 275 feet south and 330 feet east of the SE

ASCO STEEL
STANDS SUPREME

Time is precious when drilling for Oil. Broken Bits require fishing and delays. Every minute counts in the Oil Field.

Each ton of Asco Steel that leaves our plant has been produced with the sole aim of furnishing the manufacturers of Oil Well Tools, a steel that will give the longest life and stand the hardest usage. Your problems are our problems. May we prove this?

DISTRICT OFFICES
502 Cosden Bldg., Tulsa, Okla.

THE ANDREWS STEEL CO.
NEWPORT KENTUCKY

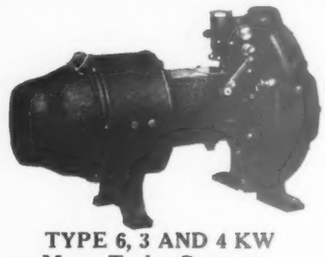
STANDARD OIL ISSUES

PIPE LINE COMPANIES

We shall be pleased to furnish information regarding these companies.

CARL H. PFORZHEIMER & CO.
(Specialists in Standard Oil and Miscellaneous Oil Securities)
25 Broad Street New York, N. Y.

IN FOREIGN FIELDS



TYPE 6, 3 AND 4 KW
Moon Turbo Generator

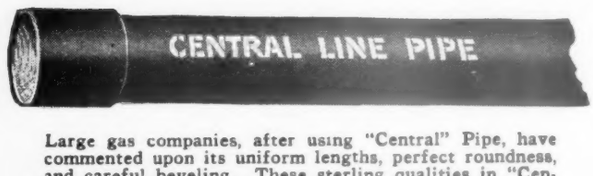
Through years of *actual performance*, MOON Turbo Generators have established their present prominence in foreign as well as domestic oil fields.

Why? Dependability—simple construction—no special skill required to operate them—capable of standing up under years of hard service. These vital features are responsible for the great number of MOON Generators in service in foreign fields today, lighting oil derricks, camps, refineries and many other types of portable lighting jobs.

Write for descriptive bulletin explaining these interesting features.

THE MOON MANUFACTURING COMPANY
108-128 No. Jefferson St., CHICAGO

"Central" Oil Country Tubular Goods



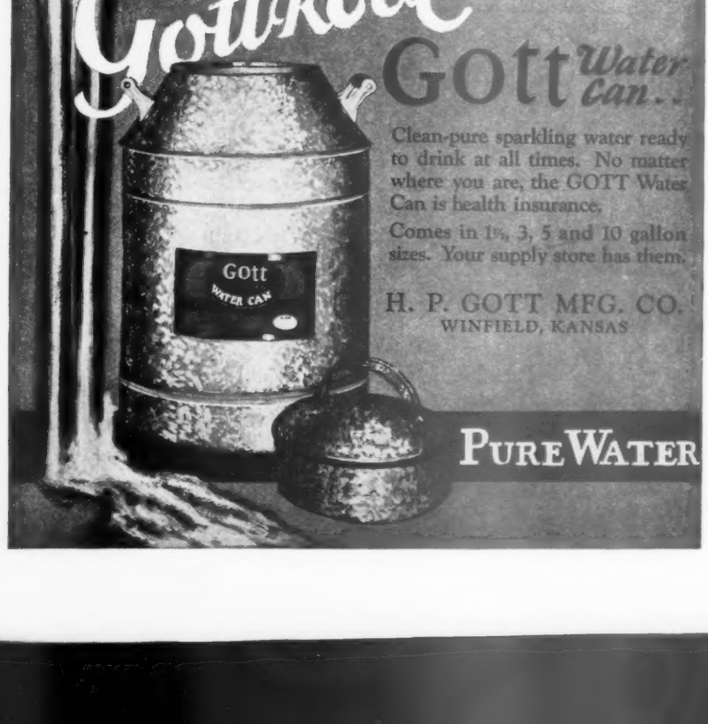
Large gas companies, after using "Central" Pipe, have commented upon its uniform lengths, perfect roundness, and careful beveling. These sterling qualities in "Central" reduce construction costs by speeding up the field work and, in addition, insure a tight durable line. For complete satisfaction all around use "Central" Pipe on your next job.

CENTRAL TUBE COMPANY

General Offices—First National Bank Bldg.
PITTSBURGH

Representatives in the Oil Fields
Mid-Continent: Allen, Sproull & Allen, Burk Burnett Bldg., Fort Worth, Texas
California: E. C. Saul, Monadnock Bldg., San Francisco, California.

DISTRIBUTORS: Taubman Supply Corporation, Tulsa, Oklahoma, and branches Dunigan Tool & Supply Co., Breckenridge, Texas, and branches; Putnam Supply Company, Putnam, Texas, and branches; Louisiana Iron & Supply Co., Shreveport La., and branches; Petroleum Equipment Co., Los Angeles, California, and branches. American Supply Co., Mexia, Texas; Standard Supply Co., Inc., Wichita Falls, Texas.


Gottkool
Gott Water can
Clean-pure sparkling water ready to drink at all times. No matter where you are, the GOTT Water Can is health insurance.
Comes in 1½, 3, 5 and 10 gallon sizes. Your supply store has them.
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
Gott
WATER CAN
PURE WATER

cor., Section 103, Block 194, G. C. & S. F. Survey, and located in Section 34½. Mid-Kansas Oil & Gas Co.'s No. 2 M. A. Smith, 200 feet south and west of the most easterly NE cor., Section 31, Block 194, G. C. & S. F. Survey. Same company's No. 23 I. G. Yates-B, 719 feet north and 409 feet west of the SE cor., Section 61, Block 1, I. & G. N. Survey. Oregon Oil Corp.'s No. 1 I. G. Yates, 200 feet south and east of the NW cor., Section 58, Block 1, I. & G. N. Survey. Roxana Petroleum Corp.'s No. 4 M. A. Smith, 330 feet south and 1,219 feet west of the NE cor., Section 27, Block 194, G. C. & S. F. Survey. Same corporation's No. 7 J. H. Tippett, 330 feet south and 1,616 feet west of the NE cor., Section 102, Block 194, G. C. & S. F. Survey. Simms Oil Co.'s No. 5 M. A. Smith, 275 feet north and 330 feet west of the SE cor., Section 103, Block 194, G. C. & S. F. Survey. Same company's No. 6 M. A. Smith, 330 feet south and 930 feet east of the NW cor., Section 103, Block 194, G. C. & S. F. Survey. The California Co.'s No. 1 M. A. Smith, Lease 1, 275 feet south and 330 feet west of the NE cor., Section 37, Block 194, G. C. & S. F. Survey. Same company's No. 10 M. A. Smith, Lease 3, 330 feet north and 948 feet east of the SW cor., Section 35, Block 194, G. C. & S. F. Survey. Same company's No. 9 I. G. Yates, Lease 1, 1,716 feet north and 1,953 feet east of the SW cor., Section 34, Block 194, G. C. & S. F. Survey. Same company's No. 10 I. G. Yates, Lease 1, 1,716 feet north and 1,412 feet east of the S Wcor., Section 34, Block 194, G. C. & S. F. Survey. Gulf Production Co.'s No. 6 M. A. Smith, Tract A, 1,973 feet south and 260 feet west of the NE cor. of their lease out of Section 28, Block 194, G. C. & S. F. Survey. Same company's No. 7 M. A. Smith and others, Tract A, 2,104 feet south and 937 feet west of the NE cor. of their lease out of Section 28, Block 194, G. C. & S. F. Survey.

Shackelford County

Roeser & Pendleton's No. 1 W. I. Cook-A, Section 61, 150 feet north and west of the SE cor. SW, Section 61, Block 10, E. T. R. R. Survey. Same company's No. 1 W. I. Cook-A, Section 62, 3,400 feet north and 505 feet east of the SW cor., Section 62, Block 10, E. T. R. R. Survey. H. M. Thomas' No. 1 H. Herron, 150 feet north and 750 feet west of the SE cor. NW, Section 10, Block 11, T. & P. R. R. Survey. Tom Wylie and others' No. 3 J. B. Matthews, 150 feet north and 450 feet west of the SE cor. of the N half of the NW, Section 58, Block 10, E. T. R. R. Survey.

Stephens County

Dubose & Snebold's No. 1 C. J. Winston, 2,890 feet north and 330 feet west of the SE cor. of the W half of Section 39, Block 5, T. P. R. R. Survey.

Terrell County

Deep Rock Oil Co.'s No. 1 H. C. Noelke, 330 feet north and west of the SE cor., Section 4, Block A-2, T. C. R. R. Survey.

Val Verde County

W. B. Thraves and others' No. 1 W. E. Wilson, 6,833 feet north and 1,680 feet east of the NW cor., Section 21, Block F, G. W. T. & P. Survey, and located in Section 115, Block E, G. C. & S. F. Survey.

Ward County

Selby and others' No. 1 A. C. Dooley and others, midway north and south and on the east line of Section 96, Block F, Gunter & Munson, Maddox Brothers and Anderson Survey.

Wichita County

W. H. Hammon and others' No. 3 S. H. McCarty-C, 150 feet south and 450 feet west of the NE cor. of the west 40 acres of the east 60 acres of the W. R. Eaves Survey, A-447.

Winkler County

Atlantic Oil Producing Co.'s No. 3 Grisham-Hunter, 330 feet north and 1,650 feet east of the SW cor., Section 34, Block B-5, School Land. Same company's No. 4 Grisham-Hunter, 2,310 feet north and east of the SW cor., Section 34, Block B-5, School Land. Roxana Petroleum Corp.'s No. 3 Ida Hendrick-C, 330 feet south and 1,650 feet east of the NW cor., Section 29, Block B-5, School Land. Same corporation's No. 4 Ida Hendrick-C, 330 feet south and 990 feet east of the NW cor., Section 29, Block B-5, School Land. Same corporation's No. 5 Ida Hendrick-C, 330 feet south and east of the NW cor., Section 29, Block B-5, School Land. Southern Crude Oil Purchasing Co.'s No. 5 Ida Hendrick, Tract 67-C, 1,650 feet south and 330 feet west of the NE cor., Section 33, Block B-5, School Land. Same company's No. 2 Ida Hendrick, Tract 67-F, 1,650 feet north and 330 feet west of the SE cor., Section 33, Block B-5, School Land. Southern Crude Oil Purchasing Co.'s No. 3 Ida Hendrick, Tract 67-F, 990 feet north and 330 feet west of the SE cor., Section 33, Block B-5, School Land. Same company's No. 4 Ida Hendrick, Tract 67-F, 330 feet north and west of the SE cor., Section 33, Block B-5, School Land. Gulf Production Co.'s No. 8 T. G. Hendrick, 330 feet north and west of the SE cor. NW, Section 34, Block B-5, School Land. Same company's No. 9 T. G. Hendrick, 990 feet north and 330 feet east of the SW cor. NW, Section 34, Block B-5, School Land.

Wilbarger County

Fain-McGaha Oil Corp.'s No. 2 W. T. Waggoner-L, 450 feet south and 150 feet east of the NW cor. of the south 200 acres of the north 300 acres of the east 360 acres of Section 31, Block 4, H. & T. C. Survey. Waggoner Refining Co.'s No. 2 W. T. Waggoner-E, 550 feet north and 152 feet east of the SW cor. NE NE, Section 30, Block 4, H. & T. C. Survey.

Corrected Locations

In Archer County: Consolidated Oil Co. and Simms Oil Co.'s No. 2 J. H. Turbeville, 150 feet south and 600 feet east of the NW cor. SE, Section 141, Robert Carson Survey, A-98. Same company's No. 3 J. H. Turbeville, 750 feet north and 450 feet west of the SE cor. NW, Section 141, Robert Carson Survey, A-98.

In Pecos County: Mid-Kansas Oil & Gas Co.'s No. 8 I. G. Yates-C, 614 feet south and 330 feet west of the NE cor. of the W half of Section 60, Block 1, I. & G. N. Survey. Same company's No. 9 I. G. Yates-C, 1,493 feet south and 330 feet west of the NE cor. of the W half of Section 60, Block 1, I. & G. N. Survey. Roxana Petroleum Corp.'s No. 3 Mrs. M. A. Smith, 330 feet south and 330 feet west of the NE cor., Section 27, Block 194, G. C. & S. F. Survey.

In Potter County: Prairie Oil & Gas Co.'s No. 1 Lee Bivins, 330 feet south and 2,640 feet west of the NE cor., Section 42, Block M-20, G. & M. Survey.

In Winkler County: Atlantic Oil Producing Co. and J. D. Collett's No. 1 T. G. Hendrick-F, 330 feet south and 990 feet east of the NW cor., Section 40, Block 26, School Land. Cranfill & Reynolds' No. 1 T. G. Hendrick-C, 330 feet north and 990 feet east of the SW cor., Section 33, Block 26, School Land. Humble Oil & Refining Co.'s No. 5 Grisham-Hunter, 2,310 feet south and west of the NE cor., Section 34, Block B-5, School Land. Magnolia Petroleum Co.'s No. 5 Ida Hendrick, 1,650 feet south and 2,310 feet west of the NE cor., Section 29, Block B-5, School Land. Murchison Oil Co. and others' No. 2 Grisham-Hunter-B, 990 feet north and east of the SW cor., Section 35, Block B-5, School Lands. Murchison Oil Co. and others' No. 3 Grisham-Hunter-B, 330 feet north and east of the SW cor., Section 35, Block B-5, School Lands.

In Young County: C. W. Clark and others' No. 2 M. Howell, 450 feet north and 450 feet east of the SW cor. of the E half of the SE. Section 1,394, T. E. & L. Survey.

JOURNAL BOXES DISCUSSED

The Hyatt Roller Bearing Co., Harrison, N. J., has issued an unusually attractive book on "Hyatt Equipped Railroad Journal Boxes." The application of antifriction bearings to railroad journal boxes is a subject much discussed. The Hyatt journal boxes are reported to be in service on more than 50 American railroads. They are built to standard A. B. A. requirements.

NOTES ON RUSSIAN OIL INDUSTRY; EXTENSION OF SOVIET EXPORTS

The Soviet Press, following the lead of the "Daily Herald" in London accuses the "Daily Mail" of quoting false figures with regard to Soviet oil sales in Britain. The accusation is based on the fact that the "Daily Mail," disregarding the Soviet boasts of increased oil exports to a number of countries, analyzed the exports to this country only and came to the conclusion that during the last five months, i.e. from May to October the Soviets lost a trade turnover amounting to about 15,000 tons of oil products a month. The figures were derived from the "Ekonomicheskaya Zhizn" and from the "Neftianoy Bulletin." The former gave the total exports for the 12 months as 381,000 tons, while the latter gave the figures for the first 7 months of the year and comparative figures for the 5 months of the previous year. By deducting the exports for the first seven months from the total, and by comparing the balance with the exports for the corresponding figures of the previous year, the loss amounts to more than 14,000 tons a month. By translating long tons into metric tons the figure exceeds 15,000 tons.

Japanese Concession in Saghalien

Braude, the Soviet oil expert, reviews the position of the Saghalien concessions granted to Japanese interests. According to this authority, the yearly consumption of oil in Japan amounts to 1,000,000 tons, while oil produced on Japanese territory does not exceed a quarter of this quantity. In consequence Japan has to import some 750,000 tons of oil, of which 200,000 tons is bunker oil. The chief suppliers are the United States, 70 per cent of the total supplies and Dutch India 30 per cent. The necessity for importing such large quantities of oil, which undoubtedly increase every year, "has compelled Japan to direct its oil policy towards the extension of production on its own territory, on the island Formosa as well as to force production of the concessions obtained by them from the U. S. S. R. on Northern Saghalien."

The Japanese Government, according to him, devotes much attention to the Saghalien fields because contrary to expectation, these fields began to yield quite considerable results. Thus, while in June, 1926, the output was 16,000 gallons, it reached 38,400 gallons in December, and the total output during 1926 was 9,120,000 gallons. At the present time the yield has reached 62,000 gallons a day and is still increasing.

It is expected that this year's yield will reach to 19,344,000 gallons. The whole concessions cover an area of 350 square miles but so far only 8,000 square miles have been let for exploitation. He argues, therefore, that Saghalien will relieve Japan from large imports from the United States and from the Dutch Indies.

Batoum Plans

The official plans of the extension "of the oil base" at Batoum are now to hand. It is stated that the proposed exports in the fiscal year just ended were at first estimated at 60,000,000 poods, but towards the end of the year they actually increased to 90,000,000 poods. As the exports during the current year are expected to be increased still further, it was decided to increase the capacity of the port.

First of all, the tanks will be enlarged and increased in number, which will increase the capacity of the reserves by 6,000,000 poods. To speed up loading, the pipes now in use are to be changed into 10 and 12-inch, instead of 6 and 8-inch diameters as hitherto. The loading or pumping station is to be electrified and the next stations are the kerosene and lubricating oils. For all this work the Naphtha Syndicate has allotted 1,000,000 rubles.

New Gusher

A message from Baku states that a new gusher at Sarakhany is giving a net yield of 300 tons of pure oil daily. In the same region a gusher, after ceasing to function, recommenced blowing with 100 tons daily.

Fighting on Finance

Messages from Baku and Grozny describes a heated discussion between oil officials and representatives of the Commissar of Finance on the question of "deductions". The trouble is due to the fact that the Commissariat of Finance has been deducting enormous amounts of money obtained by the sale of oil at home and abroad, thus leaving the industry denuded of financial resources. At the same time the banks have tightened credits, while the Government demands fullest fulfillment of the program.

According to Shokh, the director of Grozneft, the only way it was possible for the Oil Trusts to work last year was to compel the suppliers to give larger and longer credits and to cut into working capital. All this was due to the fact that the "fiscal" dues had to be paid and new capital outlays had to be made.

All officials agree that it is impossible to run the industry under the present system of fiscal deductions and they are asking the Soviet Government to return to the industry at least a share of the foreign currency obtained from the sale of oil abroad. But the Commissar of Finance remains adamant. A conference is to take place at Moscow in a few weeks time (after the celebration of the tenth anniversary) and it is hoped then to convince the Government that by taking too much money out of the oil industry it is ruining its chances of increased exports. As an alternative to actual money the oil officials will ask the Government to arrange for foreign credits in America and Germany to enable the oil trusts to purchase equipment in those countries.

Russian Oil Industry Since Revolution

Professor Gubkin, in the "Ekonomicheskaya Zhizn" reviews the trend of affairs in the Russian oil industry for the past 10 years. According to this authority, the present output of oil is 16 per cent above that of 1913. He emphasizes the progress made in the Baku fields where, during the past two and a half years, bailing was replaced by deep pumping and has enabled "a saving of 115,000,000 rubles." Hitherto, however, the trusts were mainly interested "in rationalizing and reconstructing the processes of oil production," since "lack of funds has delayed the reconstruction of refineries and generally the rationalization of the production side of the business." This in turn made it difficult to work up all the oil obtained. He stresses however, the building of a paraffin works at Grozny and the new lubricating oil works at Baku and points to them as the first steps towards further development. The following extract from his article is of special interest:

"With the yearly extension of Soviet oil exports the U. S. S. R. is naturally becoming an important competitor of the large concerns in western markets. This undoubtedly explains the hatred of the Deterdings towards us, but at the same time makes it our duty to organize our foreign trade by the same means in which the Deterdings show their strength. We must organize our own depots, our own wholesale and retail trade and sell high quality goods at a low price."

Professor Gubkin states that "the oil industry is not in need of foreign capital."

Soviets Review "Enemy Forces"

Since the conclusion of the Geneva Economic Conference, one of the Soviet delegates, Comrade Varga, a prominent official of the Communist International, has been residing in Berlin, where he is studying "oil problems." His reports make on the whole interesting reading. His latest report, dated October, 1927, is in the form of an essay for Soviet oil officials. In this Varga reviews "the

Unusually Sensitive Control
for High Pressure Gas Transmission

The Fulton Duplex Sensitive Gas Governor is designed to meet the needs of artificial or natural gas companies who desire to control a high and varying inlet pressure and reduce it to a low and unvarying outlet pressure for illuminating or fuel purposes.

The power to operate this governor is derived from two diaphragms of equal area, moving in opposite directions, but transmitting their power in the same direction. This gives a vast increase in sensitiveness and power over that possessed by a governor with a single diaphragm.

The Governor is easily and quickly installed, and due to the simplicity of its construction, requires but little attention afterward.

Catalogue on request.

The Chaplin-Fulton Mfg. Co.
28-40 Penn Avenue :-: Pittsburgh, Pa.

McGREGOR

"The Working Barrel That Works"

Over sixty thousand now in use from Pennsylvania to Argentine and from Oklahoma to India wherever oil is produced.

No Barrel can compete with the McGregor in price and saving. It comes with the barrels, valves, valve stem all complete at a price slightly more than what the old style Barrel would cost. Pumps as fast as old style barrels that are attached to the tubing.

The only pulling done when you have a McGregor in use is the rods as the complete Barrel is fastened to the rods and comes out when they are pulled. TUBING PULLING is done away with as far as the Working Barrel is concerned. Made for all size tubing. Use "Mac" Ball and Seat.

See your dealer or write us for circular

In ordering parts refer to these letters

McGREGOR WORKING BARREL CO., Inc.
Sole Manufacturers
BRADFORD, PENNA.

Made for Hard Work—Quaker Belts

There are qualities of strength and dependability in Quaker Rubber Belts that enable them to give thorough satisfaction on the hard, continuous duty drives in well-drilling.

Our IRONSIDES Belt will give long service however severe the operating conditions. It has no superior for heavy duty.

QUAKER CITY RUBBER CO.
Manufacturers of Daniel's P. P. P. Rod Packing
Main offices and factories, Wissinoming, Philadelphia
Branches: New York, Chicago, Pittsburgh, San Francisco

SKINNER Clamps stop leaks
Send for Catalog
M. B. SKINNER CO., 562 Washington Boulevard, CHICAGO

RYERSON

IMMEDIATE SHIPMENT FROM STOCK

Bars, Plates, Rivets, Tool Steel, Shapes, Sheets, Bolts, Welding Rods, Structurals, Tubes, Wire, Concrete Reinforcing, Rails, Pipe, Turnbuckles, Alloy Steel, Ascoloy, Small Tool, Machine Tools, etc.

Write for the Ryerson Journal and Stock List.

JOSEPH T. RYERSON & SON INC.

Chicago Detroit Milwaukee Buffalo St. Louis New York Cincinnati Cleveland Boston

Tulsa Office: 410 Atlas Life Bldg.

STEEL

Houston Office: D. S. Mair 220 Main Street

GAUGE POLES

Any Length **For Oil Measurements**

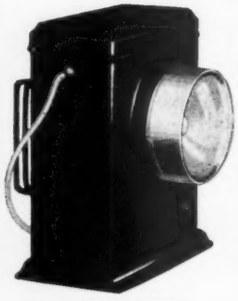
"MARSH-JOINT"

For sale by oil country supply houses or furnished promptly by the factory at Titusville, Pa.

Correspondence Solicited

MARSH GAUGE POLE COMPANY
TITUSVILLE, PA.

Super-Illumination, Safe, and Low-Priced



THE FINEST light ever developed for workers in oil fields. Insures safety against fire and explosions. It is a powerful lantern, projecting a 300-foot flood of brilliant light. Burns by the hour on two No. 6 dry cells. Batteries last up to a year in ordinary usage.

Light but rugged—will last a lifetime. Made of sheet steel for tough wear and ribbed for extra strength. Finished in vivid red baked enamel. Durable. Attractive.

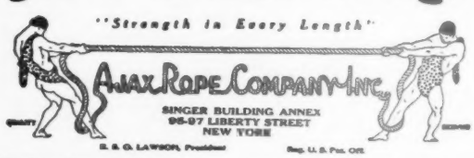
Scientifically designed for super illumination. Triple silver plated reflector, especially designed Mazda bulb, lens ground from select clear glass—all these elements precisely adjusted according to Delta standards for powerful light.

See your dealer—or write us.

ELECTRIC LANTERN
No. 10, $2.75 *list*

DELTA ELECTRIC CO. 1208 Delta Blk. MARION, Ind.

Ajax Bull Ropes



Mid-Continent Sales Distributors:
Bisett & Brown
1007 Jones Street
Fort Worth, Texas

Warehouse Representative:
H. D. Hedrick
Tulsa Transfer & Storage Co.
Tulsa, Okla.

Ajax ropes are carried in stock by the North Texas Supply Co., Cross Plains, Tex.; Rex Supply Co., Sour Lake, Tex., and Mid-Continent Supply Co., Fort Worth, Tex.

enemy forces" so as to enable the Naphtha Syndicate to fight them.

"The question of Soviet oil exports," he writes, "has started a whole series of conflicts among the large world oil concerns."

It should be noted that the Soviets have of late been building all their hopes on these alleged "conflicts."

"The fight that has been started and the real meaning of which will undoubtedly become evident by its results, focuses the position on one aspect of the problem, namely, the division of spheres of influence and power among the leading concerns in the world's oil industry."

The article is directed chiefly against the Royal Dutch Shell and the Anglo-Persian. An analysis of the capital issued by the various concerns brings Varga to the conclusion that the Royal Dutch and Anglo-Persian are not entitled to much "influence," since both their capital and the actual output of their fields is small. Thus, the Royal Dutch is said to control 10 per cent of the output and the Anglo-Persian only 4 per cent. The Standard Oil is returned as controlling 26 per cent and 10 American independent companies as controlling 16 per cent. This leaves, according to Varga, 44 per cent of the world output divided between the small producers in the United States, Central and South America and the balance between European States and the U. S. S. R. The Soviet position in these "conflicts" is first of all to develop its "independent" business and then to flirt with the Standard group. Its inclinations are directed towards the people with a capital of $4,609,000,000 and an output of 281,000,000 bbls. of oil. With regard to the skepticism expressed by Varga as to the rumored exhaustion, it should be noted that all Soviet oil authorities have repeatedly emphasized it and are actually estimating their own figures of sales on the possible decline of American oil output.

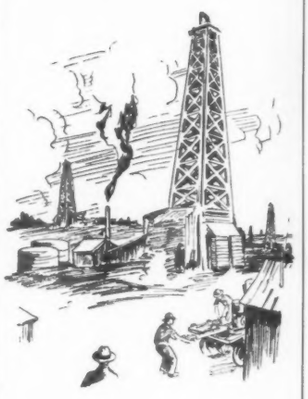
Soviet Oil Plans

During the past week Soviet oil plans as discussed in interviews and reports are concentrated on "rationalization" of output. The Soviet of Labor and Defense is now considering ways and means whereby "84 per cent of the wells will be exploited by means of deep pumping." The Trusts are already making arrangements for this reform and if they succeed in obtaining the necessary subsidy, deep pumps will be purchased in the United States.

Further consideration is being paid to changing the present aspect of the oil business; instead of being "a fuel giving industry," the oil business is to be turned into a manufacturing industry, producing high-priced commodities. According to official explanations, the very fact that the output of crude oil is being increased demands the construction of refineries and other works. The plans, therefore, contain details of many new refineries. So far the output or production of refined products "is behind the general extension of the industry." The materialization of all plans requires enormous sums.

In presenting the plans to the Government the oil officials emphasizes that the moneys required will be repaid by the industry from exports. Much stress is laid in the reports on the fact that while in 1913 the total export of Russian oil products amounuted to 914,000, tons, the exports in 1926-27 were already more than 2,000,000 tons. These figures serve as a basis for further calculations and it is shown that a capital of several million rubles could be repaid easily within the next five years merely by increasing exports.

A special section of the plan deals with new surveys. A geological survey section is to "establish the reserves in the fields under exploitation," and to "discover new deposits." But, as in all other sections of the plans, money is needed to place the work in hand. Up to the financial aspect everything is plain sailing but finance remains, as hitherto, a difficult problem.



Accurate information concerning every activity of the Petroleum Industry is becoming more and more valuable. It is absolutely essential to the man who wishes to make a success in the Oil Business.

Knowing these facts, and realizing the possibilities of quick developments of importance to you, The Oil and Gas Journal takes every means to make sure that you will receive accurate information every week, in detail, with maps, charts, well-logs, technical articles, surveys, tables, designs, pictures, etc.

The members of the Editorial Staff are working for you always. They never stop. They are on the alert constantly, seeking fresh news, verifying reports, compiling facts, investigating rumors, etc., so that you will be among the VERY FIRST to receive the benefits of new developments or expansions.

Keep in close touch with activities. Have The Oil and Gas Journal delivered to your home or office every week and always renew your subscription promptly.

Then you will have complete, authentic, valuable oil news at all times.

The Oil and Gas Journal
Tulsa, Okla.
$6.00 for 1 yr. $3.00 for 6 mo.

A Tret-O-lite Plant *is NOT expensive*

Operators usually can arrange a Tret-O-litE plant, using equipment already on the lease. No heavy initial investment—no expensive equipment to stand idle when need for large treating capacity has passed.

The Tret-O-litE method is the fast, economical and THOROUGH method of recovering oil from emulsions.

WM. S. BARNICKEL & COMPANY
St. Louis, Mo.

Tret-O-litE

Offices and Plant: Webster Groves, St. Louis County, Mo.

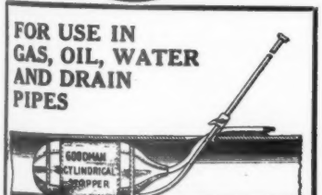
TANK CARS

Long or short term Lease

Thousands of cars—various capacities—all modern and conditioned. Rental periods of one trip to ten years. *Write for details.*

NORTH AMERICAN CAR CORPORATION
Executive Offices:
Chicago, Ill.

FOR USE IN GAS, OIL, WATER AND DRAIN PIPES



Safety Gas Main Stopper Co.
523 Atlantic Ave.,
Brooklyn, N. Y.

OIL COMPANIES ENRICH KERN COUNTY TREASURY

OIL CITY, Pa., Dec. 24.—Louis Brown, president of the Oil Well Supply Co., has announced that the Twenty-first Street works of the concern in Pittsburgh, with the exception of the warehouse there, are being moved to Oil City, where the Oil Well Supply Co. is concentrating its manufacturing facilities at the Imperial Works.

The Pittsburgh works normally employ from 250 to 500 men, more than half of whom are highly skilled mechanics. A number of these men have already been transferred to Oil City, others will soon follow and the balance required for the expansion at the Imperial Works will be recruited in the Oil City district.

The executive offices of the company are to continue to be located in Pittsburgh.

In addition to the Imperial and Pittsburgh works the Oil Well Supply Co operates plants at Oswego, N. Y., where boilers are made; at Parkersburg, W. Va.; Van Wert, Ohio; Poplar Bluff, Mo., and Los Angeles, Calif.

The announcement of Mr. Brown said in part:

"For several years we have been considering the advisability of concentrating more of our manufacturing facilities at Oil City, Pa., where we already operate the largest exclusive oil well supply plant in existence, but exigencies of the trade never seemed to offer a proper time for such an important move without seriously interfering with production.

"The present curtailment of oil field activities has given us the desired opportunity, and since August we have been gradually moving to Oil City mechanical equipment heretofore operated at our Twenty-first Street Works in Pittsburgh, where we manufacture all our drilling and fishing tools, drive shoes, tool joints, etc. After the present installaton at Imperial Works becomes operative, we propose to shut down the Twenty-first Street works with the exception of the Pittsburgh warehouse, and continue moving the equipment until all of it has been transferred to Oil City, thus making the shift without interrupting important production, and allowing us sufficient time to prepare for any increase in business which the new year may hold in store. The transfer should be completed within the next two months."

E. L. DOHENY HEADS MANUFACTURING FIRM

E. L. Doheny, according to a permit issued by the California State Corporation Department, has organized the Doheny Stone Drill Co. to manufacture engines, rotary drills, compressors, casings, pipe motors and other equipment used in oil drilling.

The company is taking over the business of the Stone Drill Co. Enlargement of the plant is said to be among the plans of the new concerns.

Capital structure calls for 100,000 shares of no par value stock, 40,010 shares of which are to be issued. No offering is to be made to the public, according to the application, but all is to be issued to the officers and directors of the Petroleum Securities Co., and the Stone Drilling Co.

Officers are E. L. Doheny, president; R. M. Sands, secretary. These two with E. L. Doheny Jr., R. R. Bray, Fred Stone, King C. Gillette, J. R. Pemberton and Harold B. Reed are directors.

NATIONAL TRANSIT GETS P. & R. AND PURE LINES

OIL CITY, Pa., Dec. 26.—Following the granting of permission for the sale of the Producers & Refiners and the Pure Oil Co. pipe lines from the southern part of Butler County north to the state

Brownell Hi-Pressure BOILERS

Brownell A. S. M. E. Code Oil Country Boiler

For oil country use Brownell offers a line of steel boilers specially designed for oil country needs.

Correct design, accurately known strength, superior craftmanship feature the Brownell line, and 71 years of boiler making experience stand "four square" back of them.

Get Bulletin B-7

THE BROWNELL CO., Dayton, Ohio, U. S. A.

Domestic Distributors: Dunigan Tool & Supply Co., Inc., Breckenridge, Tex.

Established 1855

Export Division: Oil Field Machinery Co., 90 West St., New York, N. Y.

Oil Well Valve Cups

"LUBRIKUPS" are manufactured in **three grades, Hard, Soft** and **Special Soft.** Each grade has labels with words **Hard, Soft** and **Special Soft** printed thereon.

"LUBRIKUPS" Hard used in deep wells where pressure is sufficient to expand.

"LUBRIKUPS" Soft for wells of depth up to 2000 feet where cut oil exists.

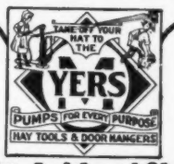
"LUBRIKUPS" Special Soft for wells of depth to 500 feet.

LUBRIKUP COMPANY, INC.
WILLIAMSPORT, PA., U. S. A.

MYERS PUMPS FOR EVERY PURPOSE

We are manufacturers of an extensive line of Well, House and Cistern Pumps, Hand and Power Water Systems for homes, farms, country estates, public and private institutions; Self-Oiling Power Pumps and Working Heads for oil and gas fields, mill, mine or factory, railroads, highway and general contractors. Ours is an established line with over fifty years of pump building experience behind it to guarantee quality and dependability.

If you have water problems to solve, either in a large or small way, write us for information and catalog.



THE F. E. MYERS & BRO. CO. Ashland, Ohio.
MANUFACTURERS FOR OVER FIFTY YEARS OF MYERS "HONOR-BILT" PUMPS FOR EVERY PURPOSE • WATER SYSTEMS • HAY UNLOADING TOOLS AND DOOR HANGERS

INVENTORY TIME

is almost here and in checking over your equipment you will doubtless find many items that you no longer need. Someone in the oil industry can use them, however, and will pay you a good price for them. Advertise your used equipment in *The Oil and Gas Journal Classified Wants Section.*

STEEL PLATE CONSTRUCTION
Steel Oil Storage Tanks, Condensers, Stills, Refinery equipment of every kind, Fabricated and Erected
RITER-CONLEY COMPANY
General Offices—Pittsburgh, Pa.

CARBON (BLACK DIAMONDS)
FOR DIAMOND CORE DRILLS

— IMPORTERS —
INDUSTRIAL DIAMONDS
— MANUFACTURERS —
DIAMOND POINTED TOOLS FOR ALL MECHANICAL PURPOSES
WRITE OR WIRE FOR CATALOGUE AND FULL PARTICULARS
THE DIAMOND DRILL CARBON CO.
61 PARK ROW, NEW YORK, N.Y. CABLE ADDRESS, CREDOTAN, N.Y.

SPECIAL MACHINERY
Designed and Built
CONTRACT MACHINE WORK
Production Basis
Well located shop in Middle West—manufacturing high grade machinery—has excess facilities which permits taking on a limited amount of special work.
Complete Modern Equipment—Skilled Organization
Send us your Blue Prints for consideration.
Box C-129, Oil and Gas Journal

NATIONAL PETROLEUM ENGINEERING COMPANY
Engineers & Geologists
TULSA, OKLAHOMA
APPRAISALS
REPORTS-COMMERCIAL & TAX
SURVEYS
ESTIMATES OF OIL RESERVES
AN EXPERIENCED OIL FIELD ORGANIZATION

U. S. INDUSTRIAL DIAMOND CORP.
475 Fifth Ave., New York

Importers of all varieties of Industrial Diamonds
Carbon (Black Diamond) and Bort (Crystalline Diamond) for Diamond Core Drilling
Best shapes and qualities always in stock.
Parcels for examination and selection will be sent on request to reliable firms.

SPECIALISTS IN
Natural Gas Financing
Zwetsch, Heinzelmann & Co.
Inc.
57 William Street, N. Y. Tel. John 3676

Protect your Oil and Natural Gas Lines with
BITUMASTIC
REG. U.S. PAT. OFF
ENAMEL
Write for our new book "The Protection of Pipe Lines"
Wailes Dove-Hermiston Corporation
17 Battery Place, New York
1 No. Frankfort St., Tulsa, Okla.
Philadelphia Cleveland Chicago San Francisco

line to the National Transit Co., by the Pennsylvania Public Service Commission, officials of the two companies are bending every effort to accomplish the actual transfer of the companies. In the meantime they stated oil would be run as heretofore and there will be absolutely no delay as far as patrons of the two systems are concerned.

One of the principal tasks that must be completed before the transfer can be actually effected in the changing of the credit balances of both producers and refiners from the books of the Pure Oil Co., to those of the National Transit Co. In this way the National Transit Co. will assume the liabilities of the Pure Oil Co. and the latter concern will turn over to the National Transit sufficient crude oil to make good the liabilities.

The actual cutting over and connecting the the lines so that they can be operated as one system, will be done as soon as possible, but this depends largely upon the weather, which is uncertain at this time of the year, as much of the work has to be done out of doors. Some oil will probably be run through the stations of the Pure Oil Co. until spring.

VENEZUELA OIL TAXES CONSESSIONS CONDITION

(Continued from Page 275)

of the shipping employed to export the oil is levied upon tankers bound for a foreign port. If the oil is to be transhipped from a Venezuelan port, this tax is omitted.

Taxes on Sales

Are there any taxes levied upon petroleum or its products in respect of sales to consumers in Venezuela?

The tax levied upon sales to consumers in Venezuela is 50 per cent of the importing duties on petroleum and its products. This importing duty is 5 centimes of a bolivar for each kilo gross weight on gasoline. On kerosene, the duty is 25 centimes of a bolivar for each kilogram gross weight.

Fifty per cent of the importing duty works out at the rate of $0.028 United States currency per gallon of gasoline, $0.148 United States currency per gallon of kerosene and $2.316 United States currency per metric ton on fuel oil. There is also a 30 per cent surtax on all oil products imported from West Indian ports for domestic consumption.

INDUSTRY INTERESTED TOO

It would not be possible to fritter away the oil resources of this nation, to endanger the national defense and security, without at the same time destroying the very capital and prosperity of the oil industry itself. If the nation's resources are being wasted in any way, if the national security and our future industrial prosperity are being jeopardized, then the nine billions of dollars of capital invested in the oil industry is equally being wasted and placed in jeopardy.—W. S. Farish.

DEMAND ALWAYS SUPPLIED

The oil industry has always responded to the demand in supplying the public with its requirements, not only in quality, but in the particular product required. It has done this as efficiently as any other industry, and at prices relatively less than that of any other great industry. It has done this even in the face of continued predictions of the experts, that each time we had reached the maximum of our production, and that the future had little to promise for the continuance of a sufficient supply.—J. Edgar Pew.

AMMONIA BUSINESS PURCHASED

The Mathieson Alkali Works, Inc., New York, has acquired the ammonia business of the B. P. Clapp Ammonia Co., with offices in Cincinnati, Ohio; Louisville, Ky.; Washington, D. C., and Providence, R. I. The Clapp Co. was one of the earliest manufacturers of ammonia in the United States.

PRIMM OIL ENGINES
FOR DRILLING
PUMPING AND
PIPE LINE WORK
Hundreds are now used in the oil fields. Their satisfactory operation for years is the best recommendation to you.
—WRITE—
THE POWER MFG. CO.
722 Cheney Ave.,
MARION, OHIO
"Oil Engine Builders for a Quarter Century"

KORK KELLEY
Pipe Line Contractor
Any Size—Any Length
Amarillo—Borger, Texas

OIL MAPS
Panhandle, West Texas, Western Oklahoma, New Mexico
AMARILLO ABSTRACT CO.
Amarillo, Texas

ARTHUR C. BROWN
SOLICITOR OF UNITED STATES AND FOREIGN PATENTS
406-412 KENNEDY BLDG.
Tulsa, Okla.
Mr. Fred Krueger
in Charge
Phone 4-2319

EDWIN B. HOPKINS
CONSULTING GEOLOGIST
25 Broadway
NEW YORK

Chester W. Washburne
Geologist and Engineer
27 William St., N. Y.

PATENTS *Write for Free Book*
MUNN & CO.
Associated for 81 years with the Scientific American
1551 Scientific American Building
24 West 40th Street, *New York City*
514 Scientific American Bldg., *Washington, D.C.*
1303 Tower Building, *Chicago, Ill.*
636 Hobart Building, *San Francisco, Cal.*
511 Van Nuys Building, *Los Angeles, Cal.*

TEXAS OIL MAPS
County and District
Catalog on Application
HEYDRICK MAPPING COMPANY
Wichita Falls, Texas

Always Renew
Your Subscription
Promptly

The Chiefest Link

How The Oil and Gas Journal Is Regarded Abroad Is Shown by the Following Letter:

The Refinery,
Isle of Grain,
Rochester, England, November 8, 1927

The Oil and Gas Journal,
Tulsa, Okla.

Please accept my grateful thanks for gift of A.P.I. Standardization reprint, which is very valuable.

The special copy of The Oil and Gas Journal reached me in first class condition.

We regard The Journal here as the chiefest link between us and the great refinery world outside—I write a resume of your contents in a weekly letter to our managing director.

With many thanks,

Yours very truly,
JOHN H. EVANS.

Keep in Touch by Using This Coupon

ORDER BLANK

The Oil and Gas Journal, Tulsa, Okla.

You are hereby directed to mail The Oil and Gas Journal to me for .....year. Enclosed find remittance $ ..... .

Classify my interests as checked by me.

.....Producing ..... Refining

.....Equipment ..... Marketing

.....Transportation

Name .....

Address .....

City .....

U. S. OR MEXICO	
One Year	$6.00
Six Months	3.00
Three Months	2.00
FOREIGN	7.00

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA KANSAS

Pipe Line Statement for October

Runs

	Month	Dy. Av.
*Prairie Pipe Line Co.	4,650,000	150,000
Gulf Pipe Line Co.	1,529,539	49,340
Texas Pipe Line Co.	1,106,724	35,701
Magnolia Petroleum Co.	2,550,366	82,271
Empire Pipe Line Co.	1,473,318	47,526
Cosden Pipe Line Co.	1,138,647	36,731
Sinclair Pipe Line Co.	2,986,633	96,343
Oklahoma Pipe Line Co.	3,893,416	125,594
Other lines	8,401,000	271,000
Total October	27,729,663	894,506
Total September	27,436,777	914,559
Difference	292,886	20,052

Shipments

†Prairie Pipe Line Co.	5,156,292	166,332
Gulf Pipe Line Co.	1,201,807	38,768
Texas Pipe Line Co.	1,037,348	33,463
Magnolia Petroleum Co.	1,818,809	58,671
Empire Pipe Line Co.	1,561,078	50,357
Cosden Pipe Line Co.	1,020,709	32,926
†Sinclair Pipe Line Co.	2,743,407	88,497
Oklahoma P. L. Co.	3,838,711	123,829
Other lines	7,750,000	250,000
Total October	26,128,011	842,838
Total September	25,406,211	846,874
Difference	721,800	4,036

Stocks

*Prairie Oil & Gas Co.	30,800,000
*Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line and Gypsy Oil Co.	9,800,890
The Texas Company	5,131,914
Magnolia Petroleum Co.	6,753,353
Empire Pipe Line Co.	4,482,898
Cosden Pipe Line Co.	3,328,316
*Sinclair Crude Oil Pur. Co.	20,250,000
Carter Oil Co.	16,103,950
Oklahoma P. L. Co.	2,717,330
*Other lines	10,000,000
Total October	111,418,650
Total September	109,566,085
Difference	1,852,565

*Estimated. †Prairie Pipe Line shipments include Texas crude and Sinclair Pipe Line shipments include Wyoming, Texas crude.

Note: Stocks do not include approximately 5,200,000 bbls. of crude oil held in storage on private tank farms and leases and approximately 1,800,000 bbls. of Texas Panhandle crude in storage in Oklahoma and Kansas.

EASTERN PIPE LINES

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for August and September:

	Aug. '27	Sept. '27
National Transit	146,479.36	149,770.19
S. W. Pa. P. L.	86,548.23	85,669.19
Eureka P. L.	395,237.28	386,201.76
Buckeye P. L. (Macksburg)	843,331.35	824,616.49
Buckeye P. L. (Cleveland)	11,953.33	11,430.57
Buckeye P. L. (Lima, etc.)	139,837.26	134,867.84
Indiana P. L.	8,905.59	9,150.58
Cumberland P. L.	367,515.04	345,038.71
N. Y. Transit	25,028.15	22,882.06
Tidewater P. L.	197,502.70	188,881.97
Pure Oil	164,866.70	159,336.57
Emery P. L.	59,569.14	57,479.57
Paragon Dev.	30,553.65	34,062.15
Pittsburgh P. L.	4,824.41	4,956.74
Stoll Oil Ref.	15,831.15	15,215.87
Total	1,886,983.19	1,808,560.83
Daily average	60,870.42	60,285.39

Note—Indian Refining Co. also reported other receipts of 375,293.93 bbls. Paragon Refining Co. had other receipts of 302,741.28 bbls. Paragon Development had other receipts of 24,753.46 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular diliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for August and September:

	Aug. '27	Sept. '27
National Transit	344,799.78	352,363.94
S. W. Pa. P. L.	343,310.98	352,236.47
Eureka P. L.	198,755.14	181,601.67
Buckeye P. L. (Macksburg)	153,543.57	144,078.47
Buckeye P. L. (Cleveland)	727.48	971.43
Buckeye P. L. (Lima, etc.)	748,093.86	861,075.42
Indiana P. L.	868,709.30	840,001.40
Cumberland P. L.	150,233.42	141,790.84
N. Y. Transit	289,844.19	315,049.51
Northern P. L.	196,331.58	184,378.47
Tidewater P. L.	150,113.65	133,684.94
Pure Oil	305,913.45	176,414.97
Emery P. L.	54,557.91	59,423.76
Paragon Ref.	177,675.03	202,284.12
Indian Ref.	379,066.52	343,722.80
Paragon Dev.	31,192.30	26,388.33
Pittsburgh P. L.	5,396.27	5,410.12
Total	4,298,243.43	4,326,377.16
Daily average	138,653.01	144,212.57

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of August and September:

	Aug. '27	Sept. '27
National Transit	1,129,180.77	1,154,733.90
S. W. Pa. P. L.	683,536.32	648,789.30
Eureka P. L.	1,949,986.99	1,803,045.25
Buckeye P. L. (Macksburg)	416,688.27	421,560.39
Buckeye P. L. (Cleveland)	89,918.83	90,809.14
Buckeye P. L. (Lima, etc.)	4,668,116.54	4,829,631.04
Indiana P. L.	620,873.22	621,233.99
Cumberland P. L.	591,843.81	614,472.24
Southern P. L.	429,471.58	466,091.05
N. Y. Transit	460,922.97	507,169.10
Northern P. L.	470,103.63	534,035.12
Pure Oil	395,429.71	400,830.33
Emery P. L.	13,506.50	12,401.24
Paragon Ref.	15,696.20	15,860.74
Indian Ref.	93,158.64	122,910.52
Paragon Dev.	6,821.39	6,146.06
Pittsburgh P. L.	2,864.26	2,978.00
Total	11,989,115.18	12,212,716.43
Increase	535,987.21	223,601.25

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of August and September, showing the gross stocks of the above fields:

	Aug. '27	Sept. '27
Pennsylvania	4,238,474.19	4,235,065.02
Lima	1,018,062.71	1,078,066.53
Kentucky	1,134,629.10	1,144,347.96
Mid-Continent	5,531,904.28	5,691,414.41
Illinois	66,894.90	63,822.51
Total	11,989,115.18	12,212,716.43

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1924	1925	1926	1927
Jan.	62,628	56,831	56,830	66,209
Feb.	65,023	60,606	60,394	61,298
Mar.	68,721	60,576	61,644	63,247
April	71,058	63,062	63,019	60,337
May	63,942	59,217	60,380	60,284
June	63,230	61,270	64,121	62,757
July	64,208	62,639	63,206	58,574
Aug.	59,942	59,686	61,815	60,870
Sept.	62,930	62,510	64,989	60,285
Oct.	64,976	60,925	62,704	.....
Nov.	56,282	59,350	61,774	.....
Dec.	55,814	57,974	58,755	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1924	1925	1926	1927
Jan.	143,518	157,889	156,066	141,227
Feb.	148,732	160,862	159,488	138,534
Mar.	147,098	164,691	150,239	133,777
April	147,611	151,429	152,471	140,227
May	134,997	146,995	160,998	144,894
June	143,010	149,467	160,267	149,773
July	124,187	161,338	160,946	151,360
Aug.	123,120	151,730	151,929	138,563
Sept.	127,326	156,719	158,915	144,218
Oct.	124,170	146,388	154,152	.....
Nov.	124,400	143,582	152,668	.....
Dec.	151,392	150,162	136,428	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1925	1926	1927
Jan.	11,353,276	9,958,170	9,713,801
Feb.	11,192,924	9,579,364	10,119,316
Mar.	11,158,297	9,438,292	10,794,044
April	11,062,082	9,805,861	11,112,286
May	11,207,562	9,531,757	11,389,321
June	11,093,796	9,585,904	11,403,871
July	11,067,455	9,734,687	11,465,130
Aug.	10,974,481	9,668,947	11,989,115
Sept.	10,781,753	9,433,732	12,212,716
Oct.	11,086,850	9,269,806	.....
Nov.	11,068,168	9,257,667	.....
Dec.	10,468,445	9,454,513	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above.

1926—	Runs	Shipments	Stocks
Sept.	2,788.18	3,373.06	13,985.0
Oct.	2,991.86	2,307.75	14,671.1
Nov.	2,810.60	1,664.55	15,817.2
Dec.	2,847.52	5,561.11	13,103.7
1927—			
Jan.	2,641.54	1,470.42	14,274.8
Feb.	2,764.30	1,982.82	15,056.3
Mar.	2,587.30	1,878.56	15,964.9
April	2,834.23	1,512.66	17,286.4
May	2,768.47	539.29	20,215.7
June	2,946.29	664.40	22,497.6
July	3,153.39	1,276.61	24,374.4
Aug.	3,057.89	8,713.11	18,718.1
Sept.	3,309.56	2,656.48	19,371.3

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, October 1	3,063,613.16
Other receipts	343,656.78
Runs from wells	591,980.12
Regular deliveries	496,432.70
Other deliveries	483,089.12

The amount of Illinois oil run by the Tidewater Pipe Co. in September was 25,580.36 bbls. and deliveries were 27,779.19 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1926—	Runs	Deliveries
September	688,798.66	516,082.46
October	681,648.96	531,467.10
November	651,263.33	498,428.37
December	668,909.58	557,947.61
1927—		
January	621,421.03	598,685.31
February	695,331.16	476,960.71
March	727,593.91	554,947.43
April	593,325.97	444,313.49
May	728,759.40	542,193.93
June	640,976.85	532,317.71
July	613,901.30	474,102.51
August	651,276.40	529,331.57
September	619,589.49	483,212.49

Tidewater Pipe Co., Ltd., also delivered in September 218,229.09 bbls. of Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls per day—	ATLANTIC PORTS						GULF COAST PORTS					Total All Ports
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	
July	13,484	17,290	33,065	9,129	5,451	78,419	.....	.....	.....	.....	968	79,387
August	18,516	3,065	48,129	17,323	36,000	113,033	.....	.....	.....	.....	.....	113,033
September	23,033	6,967	61,400	14,567	19,533	115,500	.....	.....	.....	.....	.....	115,500
October	20,936	4,366	47,968	14,129	14,387	101,774	.....	.....	.....	.....	.....	101,774
November	9,433	2,833	23,033	15,166	4,933	55,400	.....	.....	.....	.....	.....	55,400

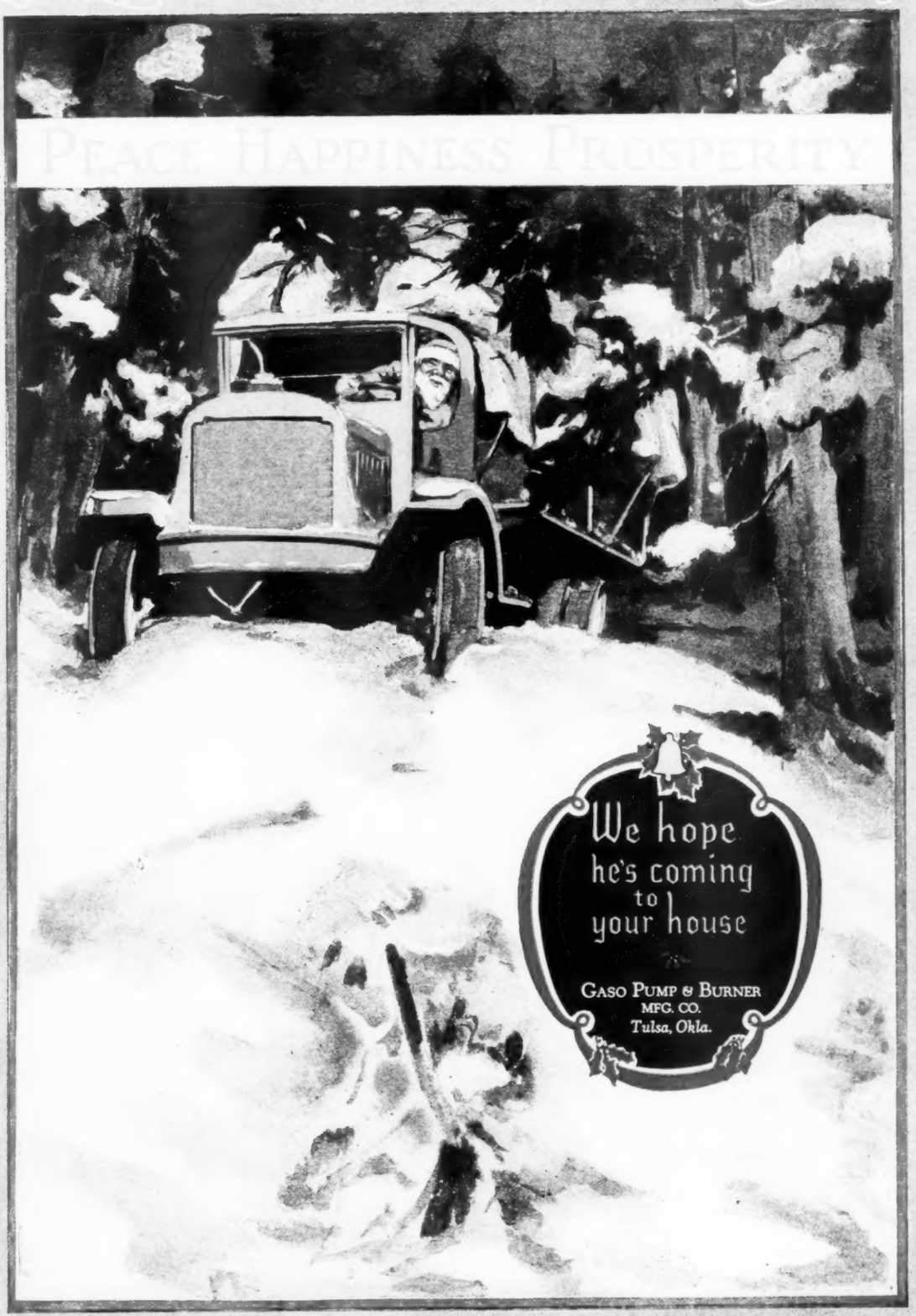
AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls per day—	ATLANTIC PORTS						GULF COAST PORTS					Total All Ports
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	
July	22,226	10,387	80,193	7,193	18,710	158,710	3,226	25,065	806	.....	29,096	187,806
August	19,323	9,032	80,903	14,258	31,831	155,387	2,097	21,161	.....	.....	23,258	178,645
September	28,033	11,433	85,500	12,800	37,700	175,467	5,667	19,233	.....	3,500	28,500	203,967
October	26,064	13,097	79,355	3,838	34,097	156,451	1,613	19,328	806	1,871	23,618	180,044
November	35,233	8,033	84,533	30,100	27,067	184,967	4,000	26,500	2,000	1,667	34,167	219,133

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS

(IN BARRELS)

1926—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
November:	Month	19,173,128	16,876,950	18,593,160	3,593,490	4,299,480	2,054,911	3,842,587	3,216,000	70,649,706
	Daily average	639,104	562,565	619,772	119,783	143,316	68,497	94,752	107,200	2,354,990
December:	Month	20,276,950	17,882,908	19,763,591	3,654,156	4,266,189	2,018,734	3,658,301	3,813,000	75,823,233
	Daily average	654,095	576,868	637,212	117,876	137,619	65,120	85,752	106,871	2,351,414
1927—										
January:	Month	20,184,872	19,035,426	18,605,363	3,769,879	4,976,469	1,905,570	3,620,303	3,332,506	73,530,382
	Daily average	651,125	614,046	600,173	121,609	131,499	61,470	84,203	107,500	2,371,945
February	Month	17,982,711	19,752,348	16,483,712	3,362,076	3,574,256	1,784,104	3,386,135	3,007,200	68,321,542
	Daily average	642,240	705,441	588,704	119,717	127,652	63,718	85,183	107,400	2,440,067
March:	Month	19,835,724	22,480,921	18,232,617	3,675,143	3,853,920	2,032,982	3,476,798	3,335,800	75,923,906
	Daily average	639,862	725,191	588,149	118,553	124,320	65,580	79,574	105,100	2,449,158
April:	Month	19,493,825	22,208,130	17,801,140	3,516,930	3,378,240	1,994,330	3,615,770	3,474,000	74,482,365
	Daily average	648,876	740,271	593,371	117,231	112,608	66,491	87,193	115,800	2,482,745
May:	Month	19,506,054	23,258,462	19,539,083	3,704,314	3,493,669	1,936,175	3,742,588	3,467,000	77,646,346
	Daily average	629,226	750,273	630,293	119,494	112,699	62,425	88,471	111,839	2,504,721
June:	Month	19,181,442	22,830,330	18,299,810	3,437,580	3,365,760	1,880,820	3,592,437	3,330,000	75,018,179
	Daily average	639,381	761,011	613,327	114,586	112,192	62,694	86,414	111,000	2,500,606
July:	Month	19,319,021	26,522,546	17,607,194	3,454,082	3,406,683	2,279,405	3,635,607	3,373,000	78,597,538
	Daily average	623,194	855,566	567,974	111,422	109,893	73,529	85,020	108,806	2,535,401
August:	Month	19,279,131	26,283,350	17,716,229	3,424,570	3,242,600	2,199,905	3,530,065	3,608,400	78,283,250
	Daily average	621,907	847,850	571,459	110,470	104,600	70,964	81,615	116,400	2,525,266
September:	Month	19,064,500	24,111,660	18,322,800	3,342,240	3,032,970	2,027,070	3,238,600	3,495,000	76,604,840
	Daily average	635,483	803,722	610,760	111,408	101,099	67,569	74,620	116,500	2,516,828
October:	Month	19,448,893	24,223,803	19,203,136	3,509,169	3,117,300	2,066,159	3,270,905	3,566,000	77,394,365
	Daily average	627,384	781,413	619,456	113,199	100,555	66,339	73,255	115,000	2,496,601
Total 12 months		232,746,251	265,467,435	220,366,818	42,433,629	43,107,546	24,169,185	40,699,005	40,486,500	899,276,369


PEACE HAPPINESS PROSPERITY
We hope
he's coming
to
your house
GASO PUMP & BURNER
MFG. CO.
Tulsa, Okla.

"2,030 Best Wishes"

Sincerely appreciative of the part your friendly patronage has played in our progress—we extend our best wishes—with the hope that the coming year may be smooth sailing for you.

2,030 Employes of

Hughes Tool Company

HOUSTON
TEXAS